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Why Career and Technical Education Teachers Contribute Intellectual Capital to Open Education Repositories: A Case Study

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Why Career and Technical Education Teachers Contribute Intellectual Capital to Open Education Repositories: A Case Study

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Doctor of Education in Adult and Lifelong Learning

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Abstract

High quality Career and Technical Education (CTE) teachers are necessary in order to prepare students to fill the gap in the nation's technical workforce. Technical skills taught by high school CTE teachers assist students as they continue their education in post-secondary technical schools. Post-secondary CTE teachers assist students in their preparation for future high-wage, high-demand technical careers. One of the many challenges reported by CTE teachers is the time-consuming development of relevant curriculum. The open education resource (OER) movement has been reported in research to alleviate some of these challenges for teachers, but research is lacking in the area of OER for CTE teachers. This exploratory study will increase the body of knowledge and guide decisions regarding sustainability of OER repositories.

This multi-case study was designed to explore the question, "Why do CTE teachers contribute their intellectual capital to OER repositories?" Six cases were chosen for face-to-face interviews using a maximum variation strategy to gain an in-depth understanding of the influential factors contributing to their desire to contribute to OER repositories. There were four major findings of this study: 1) All cases expressed an understanding of the significance of contributing to OER as a result of a previous experience as a CTE teacher; 2) Most cases expressed the importance of a stipend as an influential factor in their willingness to contribute to OER; 3) All cases indicated time as an influential factor to be weighed when committing to contributing their materials to OER; and 4) All cases reported a previous tie with the entity as an important factor in their decision to contribute to an OER repository. The findings of this study can be used to make evidence-based decisions regarding future growth and maintenance of curriculum within OER repositories. The quality and availability of CTE curriculum can help

alleviate challenges of CTE teachers who are important to the preparation of the nation's future technical workforce.

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Dedication

This study is dedicated to my children: Brandon and Morgan, Justin and Chelsea, and Colby. The pursuit of this degree was a goal of mine for many years, one I had almost forgotten until an unexpected opportunity arose. My hope for you all is that you will reach for your dreams when opportunities arise and trust that those opportunities are God's plan for you.

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CHAPTER ONE

Introduction

The purpose of this qualitative study was to explore factors that influence Career and Technical Education (CTE) teachers to contribute their time and intellectual capital to open educational resource (OER) repositories. The goal of this multi-case study is to contribute to the understanding of this phenomenon for CTE teachers. It will also contribute to the larger understanding of OER repositories for general education teachers. With this understanding, future evidence-based decisions can be made regarding the sustainability of OER repositories.

This chapter describes the background and context of the study, including Career and Technical Education, the Kansas Center for Career and Technical Education, and open educational resources. The purpose of the study, problem statement, and research questions are defined and the importance of the study, rationale for the selected methodology, delimitations and assumptions, and key terms are provided.

National Career and Technical Education

Historically, non-college bound students needing job-specific training were enrolled in vocational courses (Skinner, Witte, & Witte, 2011). These courses were often considered less challenging and a perfect fit for students who would enter the workforce immediately after high school (Fletcher, Lasonen, & Hernandez-Gantes, 2013). In the 1990's, with the advancements in workforce globalization and technological revolution, the demand for technical skills in the workforce grew (Castellano, Stringfield, & Stone, 2003). It is predicted by the year 2020, nearly two out of every three jobs in the United States will require some post-secondary education and training (Carnevale, Jayasundera, & Hanson, 2012). This demand has led to high school

vocational courses taking on a more important role in equipping students with skills to pursue post-secondary education (Rojewski, 2002).

In efforts to enhance the perception of vocational education and to integrate core curriculum with technical career exploration, the Carl D. Perkins Career and Technical Education Act of 2006 was initiated. The Perkins Act initiated a shift from the term "vocational" to "career and technical education (CTE)" and was instrumental in the integration of core academic education with technical education because it established criteria that must be met in order for a CTE program to receive national funds. Each CTE program must offer rigorous and relevant technical content aligned with challenging academic standards (Lewis, Kosine, & Overman, 2009). Schools must equip students with a Program of Study assisting them to navigate from secondary education to post-secondary education and then to the workforce (Skinner et al., 2011).

Upon meeting the designated criteria, districts are eligible for federal funding to enhance opportunities for students to develop their academic and technical skills (*2018 Handbook for Carl D. Perkins Grants*, 2017). Individual states are responsible for disseminating these funds and evaluating programs (Kacirek, Beck, & Grover, 2010). Each state has the autonomy to determine how their portion of Perkins money is to be disseminated. Kansas (the chosen site for this case study) chooses to disseminate their Perkins funds equally among secondary and post-secondary institutions (*2018 Handbook for Carl D. Perkins Grants*, 2017).

To offer innovative technologies to CTE students, state funding must supplement the federal Perkins funds. There is diversity in the amount of funding provided to CTE by each state, but notable trends among state policies include tuition-free community college initiatives,

funding formula adjustments for K-12 education, and performance-based funding in higher education (*State policies impacting CTE: 2017 year in review*, n.d.).

Recently, program growth is evident and continues to merit national and state CTE attention. CTE programs currently serve approximately 12.5 million students in high schools and colleges in the nation (https://careertech.org/cte). ACT Online reports that participation in CTE programs reduces the risk of high school dropout rates (https://www.acteonline.org/about-cte/#highschool). This is attributed to students finding relevance in their CTE courses to their future jobs as well as to their math and English courses, performing higher in some core courses than students not enrolled in rigorous CTE courses (*State policies impacting CTE: 2017 year in review*, n.d.).

Advance CTE (https://careertech.org/cte), a nonprofit organization comprised of State Directors and leaders responsible for CTE policies in all 50 states and territories in the United States, working collaboratively with the Center to Advance CTE, has developed a National Career Clusters Framework (Appendix A). This framework consists of 16 career clusters, and over 79 career pathways to address the many career options available to young people as they enter the workforce. The 16 clusters represent broad career categories and the 79 career pathways are more specific content areas within the career clusters. Industry expectations drive this comprehensive list. Using this national framework, state decision makers combine knowledge of local industry needs and economic factors to determine the CTE courses to endorse within their state.

Career and Technical Education (CTE) teachers focus on preparing students for high wage careers forecasted to be in high demand (https://www.acteonline.org/why-cte/what-is-cte). The goal of CTE curriculum is to provide students with the knowledge and skills necessary to

prepare them for a variety of future technical careers in agriculture, architecture and construction, audio visual and graphics, business and finance, health occupations, information technology, manufacturing, public service occupations, or transportation (NBPTS, 2014). High school CTE programs are designed to offer a bridge to post-secondary technical training by focusing on career exploration and development of technical skills through courses and work-related experiences. Post-secondary CTE programs focus on teaching students skills needed for technical careers and to obtain certifications and degrees leading to technical careers (https://www.acteonline.org/why-cte/what-is-cte).

Challenges Associated with Career and Technical Education

While national and state support have increased, several challenges for CTE programs exist. The ever-changing workforce creates the need for equipping students with technical, problem-solving, and interpersonal work skills (Skinner et al., 2011) but teachers have limited amount of planning time to improve their instructional methods to meet these needs (He & Cooper, 2011). Career dissatisfaction created by shrinking budgets and isolating cultures are often reported by CTE teachers (Chenevey, Ewing, & Whittington, 2008; DeLay, 2013; Greiman, Walker, & Birkenholz, 2005; Johnson & Birkeland, 2003) creating attrition issues and a national CTE teacher shortage. National and state accountability requirements, enrollment concerns, equipment updates, and increasing industry certification competencies can bury a CTE teacher under paperwork and create economic hardships on CTE programs (Skinner et al., 2011).

Realizing CTE teacher retention is important to filling the needs in the technical workforce, state legislators are focusing on advancing CTE (Kantrovich, 2007). “In 2017, 49 states and the District of Columbia passed new policies relating to CTE and career readiness” (*State policies impacting CTE: 2017 year in review*, n.d., 6). Forty-four (44) states passed

policies in 2017 related to CTE funding. The Every Student Success Act (ESSA) adopted in 2015 allows states more flexibility in their accountability measures, and has increased state funding for industry-recognized credentials and dual credit learning. Notable trends in the past five years in CTE are state policies regarding tuition-free community college, recognizing CTE in funding formulas, and performance-based funding in higher education (*State policies impacting CTE: 2017 year in review*, n.d.).

Kansas Career and Technical Education

The National Skills Coalition (2017) reports a skills gap in the Kansas labor market, with 55% of the labor market held by middle-skill jobs in 2015, while only 45% of workers in Kansas possess the necessary skills for these jobs. Attempting to decrease this gap, Kansas is a state that has signed a declaration of support for the development of CTE through adopting the Common Career Technical Core (CCTC), a set of rigorous, high-quality standards (https://www.careertech.org/Kansas). These standards, identified by business and industry, higher education, and K-12 education, define the knowledge and skills students should gain from completing identified courses depicted in the Kansas Careers Model (Appendix B) developed by the Kansas State Department of Education (KSDE). This model aligns with the National Career Clusters Framework (Appendix A). Kansas has categorized all career clusters into seven career fields: agriculture, business, family & consumer sciences, health, media & technology, and manufacturing. Each field has categories which are more descriptive, listed as career clusters. The KSDE Kansas middle school and secondary school educators are able to use this model when designing their programs and identifying competencies to be taught within each course and Kansas Board of Regents policies guide post-secondary teachers' instructional standards. The Kansas Technical Education Authority was established in 2007, comprised of 12 appointed

members from business and industry, to make post-secondary technical education recommendations to the Regents (https://kansasregents.org/about/technical_education_authority). To further enhance technical programs in the state, the 2013 state legislature passed an initiative encouraging high school students to enroll in post-secondary courses which open opportunities to higher wages, leading to a boost to the state's economy. The initiative, termed Kansas Senate Bill 155 at Work, provides free college tuition for high school students taking post-secondary CTE courses and offers incentives to districts providing opportunities to their students to earn industry-recognized credentials in high-demand, high-wage occupations (Kollman & Beck, 2013). These additional technical students create a demand for technical teachers.

Kansas Center for Career and Technical Education

Ingersoll (2001) reports that a large proportion of CTE teachers leave because they are dissatisfied. Some of the reasons attributed to teacher dissatisfaction have been the lack of instructional planning time, resources, and collaboration (DeLay, 2013; Lambeth & Lashley, 2012). Kansas legislators, in partnership with Pittsburg State University, have created the Kansas Center for Career and Technical Education (KCCTE) to offer content-specific support to Kansas CTE teachers at the middle, secondary, and post-secondary levels. "Some of the most effective CTE teachers are hired from business and industry. Their work experience is invaluable, but they often lack the skills necessary to effectively teach" (Pittsburg State University, 2013, p. 2). Understanding this challenge, the KCCTE was created to offer support for new CTE teachers with a lack of instructional experience. The support provided by the KCCTE has been developed to increase retention of CTE teachers (Dainty, 2012). By increasing retention of CTE teachers, districts can continue to develop and maintain rigorous CTE

programs, providing the state with more highly trained technical workers. “The Kansas Center for Career and Technical Education (KCCTE) was created with the purpose of providing technical and professional development for Career and Technical Education (CTE) instructors” (https://kccte.pittstate.edu/about/index.html, para. 1). To establish this support, the KCCTE faculty and staff provide:

- technical workshops to enhance industry skills.
- resources to alleviate cost and time in instructional preparation.
- mentoring opportunities to provide guidance by experienced teachers.
- technical teacher education coursework to enable CTE teachers to advance their education level.

The KCCTE Resource Library was created to offer instructional materials to CTE teachers who are challenged with continually developing innovative learning experiences for students that meet the rigorous requirements of today’s CTE programs. The collaborative nature and networking provided through this program can relieve some of the effects of isolation felt by some CTE teachers (DeLay, 2013) especially in the rural areas of Kansas where often the CTE teacher has limited access to experienced teachers of the same content area. While all areas of support offered through the KCCTE (workshops, resources, mentoring, and coursework) function together to address these issues, this study focused only on CTE teachers who have contributed resources to the KCCTE Resource Library.

KCCTE Resource Library

A repository has been developed by KCCTE staff to allow CTE teachers an opportunity to share their instructional resources. Archived materials include links to websites, lab safety sheets, classroom management tips, learning strategies, and complete course materials

(https://kccte.pittstate.edu/resources/index.html). After creating an account using their email and a self-generated password, teachers have access to upload to or search and download relevant content-specific materials from this repository. All materials are reviewed for relevancy by another content-specific teacher or person in industry before they are accessible. After materials have been approved, they are available as a free download in an editable format. Teachers may use the materials as they deem appropriate in their classroom without copyright restrictions.

Teachers receive a stipend if they choose to develop materials considered necessary by the KCCTE staff for a complete one-semester course. The complete course materials include an overview describing the course content, a suggested timeline for teaching each unit, lesson plans, lecture notes and presentations, student activities, student assessments, and answer keys. Materials submitted as complete courses do not include copyrighted materials from textbooks or other creators. The goal of the KCCTE staff is to provide the registered account users free access to teaching materials that do not require the teacher to purchase resources, textbooks, or subscriptions. These downloadable course materials provide teachers a guideline for teaching a course meeting state competencies and standards. According to feedback received by the KCCTE, this is a time saving resource for teachers, and is especially helpful to new teachers.

Recruitment of Contributors

Recognizing the importance of willing contributors to achieve sustainability of the repository, recruitment of contributors to the KCCTE Resource Library has been a focus of the KCCTE staff. Several recruitment methods have been utilized. To date, budget constraints, informal feedback from contributors, and staff meeting discussions guide the methods of recruitment. Mailed packets are sent annually to all high school administrators and post-secondary CTE coordinators in the state with informational postcards about the KCCTE and the

services it provides, encouraging them to utilize the KCCTE Resource Library. The registration process allows the KCCTE staff to generate a contact list and provides a method of tracking library use. Utilizing the contact list, annual email campaigns remind registrants of the opportunity and necessity of contributing. Members of the KCCTE staff routinely attend and present at CTE conferences informing attendees of the KCCTE Resource Library and the need for contributors. Social media posts notify followers of new submissions to the KCCTE Resource Library and invite teachers to contribute. While the number of contributors has been slowly growing, the KCCTE staff does not have a full understanding of why teachers are willing to create and share their instructional materials with the KCCTE Resource Library. Future recruitment efforts will be guided by a deeper understanding of the experiences of previous contributors.

KCCTE Resource Library Contribution Process

Once a teacher has expressed interest in contributing resources, initial contact is made through a phone call to discuss the process and the resources. After reaching an agreement to provide complete course materials to the KCCTE Resource Library, a stipend contract for providing the resources is signed, and contact is maintained through email with the contributor, guiding them in the development of their materials. The teacher must develop their materials utilizing the KCCTE lesson plan template. As the coordinator of the KCCTE Resource Library, I work closely with these individuals providing technical support, monitoring their progress, and responding to questions. Materials must be provided according to the KCCTE Contributor Agreement (Appendix D) and in their entirety before the agreed upon stipend will be delivered. All complete course materials are marked with the contributor's name and with Creative Commons licensing (https://creativecommons.org/about/). This licensing allows the creator to

give free, standardized permission for others to share and use their work. After initial submission of the course materials is made, accuracy of resource citations and consistent formatting of all documents is checked. Additionally, all documents are marked with the correct Creative Commons license.

Simultaneously, a subject matter expert (SME) reviews the materials. This individual is either working in industry or is teaching the same content. The SME is looking for content validity and clarity of instructions. The contributor then revises their content, according to the SME's notes before the materials become accessible to all teachers. When uploading to the library, the contributor signs an agreement indicating the release of any copyright restrictions, and verifying that all materials are of their own creation. Uploaded materials can be located through a search engine by anyone who has registered with the KCCTE. The KCCTE Resource Library issues the warning that materials are not to be used for financial gain. Users are also encouraged to give credit to the contributor by leaving their name on the materials. Users are required to sign in by email and password, allowing KCCTE staff to report analytics to stakeholders about the usage of the KCCTE Resource Library.

The entire contribution process typically requires six to eight months to complete (Appendix D). This process assures teachers that materials in the KCCTE Resource Library are specifically designed for the CTE teacher and vetted for accuracy. The course materials and a timeline for teaching the course are downloaded in a compressed file, with all documents editable and free to distribute in the classroom. No copyright restrictions exist, and no purchases, subscriptions, or textbooks are required. Each course is similar in format, following a template provided by KCCTE.

An uploaded complete course is documented in a database with a suggested revision date. This date is used to review materials, ensuring that materials offered in the resource library are relevant and up-to-date. When possible, these materials are sent back to the original contributor for updates. The method of distribution and nature of the materials located within the KCCTE Resource Library are considered OER.

Open Educational Resources

Attempting to improve worldwide future education, William and Flora Hewlett began supporting OER in 2002. The Hewlett Foundation defines OER as:

> teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions. (https://www.hewlett.org/strategy/open-educational-resources, para. 7)

The goal of this organization is to provide resources to education to increase access and equity to all students. Federal and state initiatives developed over the past decades, such as EngageNY, housing entire curricula and downloaded more than 45 million times, or a more informal collection such as the 16,000 lessons shared on BetterLesson (McShane, 2017), are the result of such initiatives. The KCCTE Resource Library's instructional materials are another example, a repository available for informal instructional materials and complete curriculum created by CTE teachers.

Multiple studies and reports are available describing the history, benefits, and growing popularity of OER (Schmidt-Jones, 2012; Tonks, Weston, Wiley, & Barbour, 2012; West, 2016; Wiley & Gurrell, 2009; Wiley, Hilton, Ellington, & Hall, 2012) and concerns about the sustainability of OER (Atenas & Havemann, 2014; McShane, 2017; Nascimbeni & Burgos, 2016; Pirkkalainen, Pawlowski, & Pappa, 2017; West, 2016; Wiley & Gurrell, 2009). McShane

(2017) explains the growing popularity of OER: "Teachers know what is best for students. Teachers and other educators want to collaborate with each other" (p.3). This is true for academic teachers and CTE teachers and is recognized by some states in the funding of OER for CTE such as California's CTE Online repository. Kansas legislators and Pittsburg State University recognized the importance of offering similar resources to its CTE teachers by including funding for the KCCTE Resource Library as one of the core missions of the KCCTE.

While recognizing the importance of all OER and the previous research on this topic, this study focused specifically on CTE teachers and why they are willing to provide resources to the KCCTE Resource Library.

Problem Statement

Interest in OER has increased in the past 20 years and there is significant research indicating that OER are a viable option for teachers to locate relevant content for instructional purposes (McShane, 2017). While there are many OER repositories available for teachers, the KCCTE provides a repository for CTE content-specific teacher resources. The sustainability of the KCCTE Resource Library depends on CTE teachers being willing to create and share their instructional materials in a public domain. The limited amount of research regarding why CTE teachers are willing to contribute their intellectual capital hinders evidence-based decision-making regarding the sustainability of quality OER resources

Purpose of the Study

The purpose of this case study was to explore why CTE teachers are willing to contribute their time and intellectual capital to OER repositories. To achieve growth and sustainability, it is important to understand the factors influencing the contributors' willingness to share. Currently, the KCCTE has no data to make necessary sustainability decisions. By collecting perceptual data

from previous contributors, the KCCTE staff may have a deeper understanding of the participants who can inform decisions to grow and improve the shared resources within the KCCTE Resource Library.

Research Question

The research question that guided this study was, "Why do CTE teachers contribute their intellectual capital to OER repositories?"

Importance of the Study

Schools are struggling nationwide to retain quality CTE teachers (Wilkin & Nwoke, 2011). Ingersoll (2001) reports teacher attrition is a result of a variety of reasons but one of the most reported is that they are dissatisfied with their jobs and are seeking better career opportunities. Research indicates that retirements, lack of resources and administrative support, the need for collegiality and self-confidence are all factors contributing to a shortage of CTE teachers (Lambeth & Lashley, 2012).

Many CTE teachers enter the classroom through alternative certification routes. While these CTE teachers have a deep understanding of the knowledge and skills students need to enter the workforce, it is important for them to learn the skill of developing meaningful curriculum (Knowles, Holton, & Swanson, 2005). Access to high quality rigorous content developed by CTE teachers can help to alleviate some of the stress caused by this lack of resources. Repositories for OER for the CTE teacher, paired with proper professional development opportunities, can assist in reducing attrition rates among CTE teachers. With the increase in career satisfaction, retention rates will rise, and more highly qualified CTE teachers will be developed (Dainty, 2012).

Recognizing the importance of this research, the Kansas Center for Career and Technical Education (KCCTE) has been created to offer a variety of professional development activities, allowing CTE teachers the opportunity to network and support each other. One of these opportunities is access to an OER repository hosting CTE curriculum, the KCCTE Resource Library. By conducting this study, factors influencing the willingness of CTE teachers to contribute their intellectual capital to OER repositories will be explored. This exploration of factors will increase the body of knowledge currently lacking in this area and guide decisions regarding sustainability for OER. Some benefits of this research may also be found for general education OER repository facilitators.

Holistically, an increased understanding of the perceptions and experiences of CTE teachers who have created and shared instructional materials will potentially benefit the OER community. Teachers with increased access to affordable, copyright free materials will have more opportunities to bring innovative lessons to their students providing them with the knowledge and skills necessary to prepare them for a variety of careers. For CTE students, this opportunity of receiving a more rigorous technical education, places them in the position to obtain high-demand, high-wage technical positions in the workforce. This, in turn, can help alleviate the gap existing in the nation's technical workforce (Skinner et al., 2011).

Rationale for Methodology

Because the research question focused on why CTE teachers are willing to contribute to an open educational resource repository, a qualitative research method was utilized for this study. According to Patton (2014), the qualitative researcher is able to capture people's stories, gaining a more descriptive understanding of *why* something is happening or *how* things work.

Creswell (2013) stresses the importance of choosing one of five approaches when conducting qualitative research. One of those five approaches is case study research, conducted to gain a deep understanding of a specific individual or organization. “If you needed to know “how” or “why” the program had worked (or not), you would lean toward a case study or a field experiment” (Yin, 2018, p. 11). Creswell (2013) defines the case study as a “real-life, contemporary bounded system (a case) through detailed, in-depth data collection involving multiple sources of information” (p. 97). This collection ranges from interviews to audiovisual materials. As the coordinator of the KCCTE Resource Library, I have background knowledge and access to multiple data sources for this study. The research question being asked in this study is contemporary with access to multiple sources of information. This knowledge led to a case study research design.

Within qualitative research, the researcher’s role is considered an active one (Bloomberg & Volpe, 2016). The researcher must be involved in the data collection process and willing to be reflective in the report. Creswell (2013) describes the researcher’s role in this process as rigorous and instrumental in the success of the study. Interviews were chosen as the primary source of data collection to obtain a deeper understanding of the perceptions of teachers and their willingness to contribute to OER repositories. Through interviews, I was able to ask open-ended questions, allowing responses that might not have been possible through quantitative research. While actively listening, I was able to look deeper into responses and probe areas that seemed to be enlightening.

Six selected cases were chosen for interviews from contributors who are currently CTE teachers and have contributed course materials to the KCCTE Resource Library. These cases were chosen using a maximum variation strategy in order to gain perspective from teachers with

various characteristics. I have had a longitudinal relationship with these contributors due to the length of the contribution process and considered this knowledge of the individuals when making the case selection. Teachers from six career fields (Agriculture, Business, Family & Consumer Sciences, Media & Technology, Design, Production & Repair, and Health) had contributed complete course materials to the KCCTE Resource Library at the time of this study, and one case was selected from each career field.

To achieve a deeper understanding of each case, secondary forms of data were collected. These included the courses contributed by each case, the communication records between myself and the contributor while developing materials, the Contributor Agreement (Appendix D), and the subject matter expert (SME) notes. These secondary sources were used to corroborate data gathered during interviews and aided in providing triangulation during the analysis, findings and conclusions phases of research.

Delimitations and Assumptions

Delimitations are stated in order to clarify the boundaries of the study (Bloomberg & Volpe, 2016). The following delimitations are defined for this study:

- Only CTE teachers who have successfully completed the process of contributing complete course materials to the KCCTE Resource Library and have met all obligations of their contract with KCCTE were chosen to participate in this study.
- Only full-time CTE teachers at the secondary or post-secondary institutions were considered during case selection for this study.
- Only CTE resources were considered in this study.

Assumptions are items that the researcher believes are true going into the study, which may prove to be unwarranted (Bloomberg & Volpe, 2016). The following assumptions were made before the data collection phase, and reflected upon after findings were reached:

- The methodology used in this study has the ability to correctly analyze respondents' perceptions.
- The participants in this study will be honest in their responses.
- It is assumed that the stipend provided is not the only incentive influencing teachers' willingness to contribute to the KCCTE Resource Library.

Definitions of Key Terms

Career Clusters: The 16 career categories as defined by the National Career Clusters Framework.

CTE: Career and Technical Education.

KCCTE: Kansas Center for Career and Technical Education. Created through a partnership with Kansas legislators and Pittsburg State University to offer content-specific support to Career and Technical Education teachers.

KSDE: Kansas State Department of Education.

OER: Open Educational Resources.

Pathways: The 79 career pathways organized within the 16 career clusters as defined by the National Career Clusters Framework.

PSU: Pittsburg State University. Located in Pittsburg, Kansas.

Chapter Summary

Chapter One of this study provides information regarding the background of Career and Technical Education in the United States and in Kansas, the Kansas Center for Career and

Technical Education and its resource library, and open educational resources. The purpose of the study, problem statement, and research questions are stated. The importance of the study, rationale for the selected methodology, delimitations and assumptions of the study, and definitions of key terms were explained. Chapter Two presents a literature review of Career and Technical Education and open educational resources.

CHAPTER TWO

Literature Review

The purpose of this study was to understand the phenomenon of why Career and Technical Education (CTE) teachers share their intellectual capital with open educational resource (OER) repositories. The review of literature includes a summary of challenges faced by CTE teachers and previous research about OER including benefits, costs, and concerns about sustainability.

Challenges Associated with Career and Technical Education

CTE programs are struggling nationwide to retain quality teachers (Wilkin & Nwoke, 2011). Ingersoll (2003) reports that 46% of teachers leave within their first three years of teaching. As a result, districts are lacking in highly qualified teachers (Brill & McCartney, 2008; Hanushek & Rivkin, 2010; Shockley, Watlington, & Felsher, 2013). Many studies have been conducted to determine the cause of the teacher attrition rates. Ingersoll (2001) reports teacher dissatisfaction leads to teachers seeking better career opportunities. Career dissatisfaction created by shrinking budgets and isolating cultures are often reported by CTE teachers (Chenevey et al., 2008; DeLay, 2013; Greiman et al., 2005; Johnson & Birkeland, 2003; Smith & Ingersoll, 2004). Isolation is especially a challenge for the CTE teacher, as there is often only one CTE teacher in a district, with no one to collaborate with (DeLay, 2013). Other research indicates that retirements, lack of resources and administrative support, the need for collegiality and self-confidence are all factors contributing to a shortage of CTE teachers (Lambeth & Lashley, 2012). Ladd (2011) includes the lack of administrative and peer support and unsatisfactory resources as reasons teachers are not willing to remain in the classroom.

Research on CTE programs has identified educational preparedness, teacher commitment, social integration, first year teaching experience, skills and abilities, and institutional factors as six areas related to CTE teacher retention. Within each area, specific influences have been identified affecting retention. Family and consumer science teachers reported the importance of acquiring skills using classroom technology, facilitating student organizations, developing relationships with students, parents, administration and colleagues, and confidence in curriculum development as some of the important factors to encourage retention (Dainty, 2012). In a similar study, Agriculture teachers reported curriculum development, classroom management, student assessment, and time management as possible areas to address to improve retention rates (Elliott, Dainty, & Jones, 2017). Trade and industry teachers have reported that they have strong content knowledge, but could use guidance selecting course content, using classroom time wisely, and navigating extra-duty assignments, especially during their first year (Su, Dainty, Sandford, Townsend, & Belcher, 2011). Assessment tools, student motivation, curriculum development, lesson planning, and state standards documentation are five identified challenges for new teachers (Yohon, 2005). He and Cooper (2011) describe the feelings of resentment reported by new teachers who bring work home with them in order to grade and plan lessons.

Many CTE teachers enter the classroom through alternative certification routes. Kansas is one of the states that allows various methods of teacher certification. While these CTE teachers have a deep understanding of the knowledge and skills students need to enter the workforce, it is important for them to learn the skill of developing meaningful curriculum (Knowles et al., 2005). The ever-changing workforce creates the need for equipping students with technical, problem-solving, and interpersonal work skills (Skinner et al., 2011). However, teachers have a limited

amount of planning time to improve their instructional methods to meet these needs (He & Cooper, 2011). National and state accountability requirements, enrollment concerns, equipment updates, and the increasing industry certification competencies can bury a CTE teacher under paperwork and create economic hardships on CTE programs.

Considerable research has been conducted to propose solutions to this teacher retention issue. Extensive research of mentoring and induction programs have found that such programs assist teachers as they transition into their teaching role (Franklin & Molina, 2012; Rayfield, McKim, Lawrence, & Stair, 2014). However, often local mentoring programs do not address content-specific needs of the CTE teacher prompting research in mentoring programs and professional development needs specifically for CTE teachers (Drage, 2010; Ingersoll & Strong, 2011; Dainty, 2012).

Collaboration is one method suggested to help achieve teacher satisfaction. Providing teachers with time to collaborate and share resources and best practices is one method of empowering CTE teachers to become innovative in the tough economic times the field of education is currently facing (Skinner et al., 2011). Professional development activities for CTE teachers focused on content-specific workforce trends, career and technical requirements, and new innovations are important to meet some of the reported needs (Sandford, Dainty, Belcher, & Frisbee, 2011).

Agriculture and business teachers have reported their need of the ability to actively seek and collaboratively share instructional resources. Family and consumer science and technology teachers report needing professional development opportunities to increase their knowledge and skills related to teaching (Drage, 2010).

Research indicates that collaboration can increase self-efficacy which leads to overall career satisfaction. With the increase in career satisfaction, retention rates will rise, and more highly qualified CTE teachers will be developed (Dainty, 2012). Recognizing the importance of this research, The Kansas Center for Career and Technical Education (KCCTE) has been created to offer a variety of professional development activities, allowing CTE teachers the opportunity to network and support each other.

> The KCCTE has been created to assist CTE teachers engage in collaborative opportunities such as workshops, resources, mentoring, and coursework. Through this ongoing integration of collaborative activities, CTE teachers can enhance their teaching and technical skills, becoming more confident and satisfied in their careers. Kansas legislators and Pittsburg State University have recognized the shortage of CTE teachers as a critical issue. To adequately meet workforce needs, highly qualified technical teachers at the secondary and post-secondary levels are vital. (G. Belcher, Director of KCCTE, personal communication, May 13, 2018).

Open Educational Resources

Open educational resources (OER) are defined by the Hewlett Foundation as

> teaching, learning and research materials in any medium – digital or otherwise – that reside in the public domain or have been released under an open license that permits no-cost access, use, adaptation and redistribution by others with no or limited restrictions" (https://www.hewlett.org/strategy/open-edu,cational-resources, para 7).

With the advantage of today's web technologies, teachers are able to collaborate and share resources through online avenues, removing the barriers of face-to-face collaboration. The growing popularity of TeachersPayTeachers, Pinterest, and #GoOpen have given teachers new methods of locating resources to integrate into their classrooms. The initial goal of these sites was to provide free resources to teachers, but the interaction provided by these repositories is providing teachers with a sense of community and can offset the lack of collaboration and satisfaction that is often missing from their day-to-day teaching role.

Benefits of OER

McShane (2017, p. 3) states, "Teachers know what is best for students. Teachers and other educators want to collaborate with each other." Multiple studies and reports are available describing the benefits and growing popularity of OER (Schmidt-Jones, 2012; Tonks et al., 2012; Wiley et al., 2012). One initial benefit of using OER in the classroom is the cost savings to students who no longer buy textbooks when the instructor adopts OER for their course (West, 2016). This ability to repurpose resources is allowing teachers the opportunity to meet student needs for each individual school and students are able to use resources long-term with no concern over copyright issues. This promotion of OER leads teachers to provide students with a higher quality of education, reducing social inequities (Atenas & Havemann, 2014).

Challenges of OER

Studies have also been conducted to explore the challenges facing OER proponents and institutions housing the repositories (Atenas & Havemann, 2014; McShane, 2017; Nascimbeni & Burgos, 2016; Pirkkalainen et al., 2017; Wiley & Gurrell, 2009). The promise and popularity of OER seems to be more positive than the reality when looking at quality and sustainability of online instructional materials (Pirkkalainen et al., 2017). The OER librarian must face the challenges of selecting, organizing, disseminating, cataloging, updating, and promoting materials (West, 2016).

Concerns have been expressed about meeting state standards when using free resources as well, and conversations have taken place about the term "open" when they are regulated by government standards (Wiley & Gurrell, 2009). While there are many open resources available to teachers, it can be time-consuming trying to locate high-quality materials and create a sequence of lessons to form an entire curriculum (Shum & Ferguson, 2012). Wiley and Gurrell

(2009) identify the need of teachers to have access to peer-reviewed resources of high quality and usability. They make the point that materials must be easily adaptable to the needs of the users, or the quality is wasted.

Complete lesson plans such as found in EngageNY have been growing in popularity but the debate continues about how to maintain these high-quality, relevant, free resources without overburdening teachers (McShane, 2017). “Teachers want free, high-quality resources, but the people who create them want to be paid for doing so” (McShane, 2017, p. 2). Some open education projects have obtained grant money to create a repository but have not been able to continue their practices when the grant period ends (Wiley & Gurrell, 2009).

The OER Contributor Costs and Benefits

Recognizing that sustainability of OER repositories is lost without the contributor, some researchers have begun to explore the costs and benefits on behalf of the teacher who chooses to share their instructional materials. Emotional ownership of the materials being created can be a barrier to contributor participation implying the importance of contributors’ feelings of security, control, comfort, and trust in sharing their intellectual property. Abrizah, Hilmi, and Kassim (2015) also noted the importance of trust in the quality of resources provided in the OER repository as important to a contributor’s willingness to share their resources. Professional incentives to share openly are missing in the educational culture according to Alevizou (2015). Some teachers may lack the confidence to contribute (Petrides and Nguyen, 2008).

Regardless of the popularity, benefits, and costs, the future success of the OER movement will hinge upon the engagement of teachers to “create, share, discover and reuse quality resources” (Atenas and Havemann, 2014, p. 2). Repository librarians will need to face the

challenge of locating willing teachers to contribute high-quality, relevant, and usable materials in a cost-efficient manner in order to achieve sustainability.

The Willingness of the OER Contributor

Reciprocity, incentives, and team collaboration are factors reported as important to the contributor and their willingness to share knowledge and resources within an organization's social media platform (Vuori & Okkonen, 2012). For teachers, Abrizah et al. (2015) concluded career recognition was an influencing factor of willingness to contribute to OER repositories and found that teachers are influenced by the idea of increasing their personal and professional merits, bringing them prestige in their institution and among their peers. A sense of trust and security must be present for teachers to be willing to collaborate and share (Pirkkalainen et al., 2017). While this seems to be an extensive list of how and why teachers are willing to become contributors to OER, there is a lack of research existing for OER repositories hosting CTE curriculum. Understanding this phenomenon can advance the research for sustainability of the OER repositories for the teachers of CTE, as well as possibly add to the body of knowledge for general education OER repositories.

Chapter Summary

Chapter Two presents a literature review of the struggles of Career and Technical Education. A description of open educational resources was provided and a summary of the benefits and challenges previously researched. Chapter Three describes the methodology chosen for this study, including details about the individual cases, chosen by utilizing maximum variation strategy.

CHAPTER THREE

Methodology

The purpose of this case study was to gain a better understanding of why Career and Technical Education (CTE) teachers are willing to contribute to open educational resource (OER) repositories. Face-to-face interviews, combined with member checks of the interview transcriptions, were the primary methods of data collection used in this case study and discussed in this chapter. The chosen research method, qualitative case study, and its appropriateness for the study, the details of case selection, analysis methods, credibility, dependability, and transferability are described.

Research Method

The hope of a qualitative researcher is to gain a deeper understanding of the subject being studied through the collection of a variety of materials (Denzin & Lincoln, 2005). Interviews and observations are valuable to the qualitative researcher because they can be conducted in their natural setting, often through intense and prolonged contact with the situation (Miles, Huberman, & Saldana, 2014). A variety of documents are collected and analyzed in order to identify themes and relationships. Within qualitative research, the participants can be selected based on criteria set by the researcher, which allows a more in-depth understanding than one might gain through random sampling (Creswell, 2015). According to Patton (2014), the qualitative researcher is able to capture people's stories, gaining a more descriptive understanding of why something is happening or how things work. In comparison, quantitative researchers seek to study the views of a larger diverse population (Creswell, 2015). Used to compare groups or analyze certain trends, a quantitative data collection instrument will focus on collecting numbers that can be

analyzed and generalized from a smaller number of people, the sample, to a large number of people, the population (Creswell, 2015).

Seeking an in-depth understanding of the perceptions of OER contributors, a qualitative method for this study was chosen. As the coordinator for the KCCTE Resource Library, I have had a prolonged experience and multiple interactions with contributors as they have developed and shared their instructional materials. Various documents were available as secondary data sources including the materials contributed, numerous email communications, notations I have made as the materials were developed, and contract information concerning stipend amounts and deadlines. These sources of data were valuable in providing insight about the thoughts and attitudes of the contributors as they moved through the process of developing and sharing their intellectual capital. The primary sources of data collection were interviews conducted with previous contributors to the KCCTE Resource Library. The interview transcriptions and member checks, in combination with the contributed materials, provided a deeper understanding of the issue than a quantitative study might allow.

Case Study Design

The design of the qualitative study is a guide to assist the researcher in connecting the initial research questions to the evidence (Yin, 2018). Yin (2018) lists the three conditions to consider when designing a case study as (a) the form of the research questions, (b) the researcher's control of behavioral events, and (c) whether the event is contemporary or historical. The researcher's analysis of these three conditions are important in determining if the case study is exploratory, descriptive, or explanatory.

If the questions are mainly asking "what" is happening, the study might likely fall into exploratory and might be answered through surveys or experiments, even though any of the five

types of research methods can be utilized for exploratory studies. Further analysis of factors surrounding the event must next be conducted. “If you needed to know ‘how’ or ‘why’ the program had worked (or not), you would lean toward a case study or a field experiment” (Yin, 2018, p. 11). If “how” and “why” questions are being utilized, the next condition to consider is the researcher’s control over behavioral events. The third condition deals with whether the event is historical in nature or contemporary. Yin (2018) points out that there is always some overlap of methods, but that the case study has a unique strength, the variety of evidence that are collected.

Using the information presented by Yin (2018) and Creswell (2013), an exploratory multi-case study design was developed to gain a deep understanding of the perspective of curriculum contributors to an OER repository. First, the research question led to discovery of why contributors are willing to share their instructional materials. Second, there was no manipulation of behavior, or control, in this study such as in an experiment. Third, the event is contemporary, happening currently, allowing access to individuals for interviewing. For this particular case study, I was able to gain insight into perspectives of multiple participants, also referred to as a multiple-case study (Yin, 2018).

Identifying the cases. Identifying the case(s) to be studied requires the researcher to navigate two steps: defining the case and bounding the case (Yin, 2018). The case can be a single person, a community, or an event. In this research, the case study was a program, the Kansas Center for Career and Technical Education (KCCTE) Resource Library, and the context of the case study were the contributors to the KCCTE Resource Library. The cases were chosen by developing criteria while conducting the second step, bounding the case.

Bounding the case assists the researcher in determining the scope of the data collection by determining criteria such as time limitations and specific locations. Bounding allows the researcher to distinguish between the phenomenon being studied and the context of the case (Yin, 2018). The following criteria were met to be considered a case for this study:

(a) Must currently be teaching Career and Technical Education (CTE) course(s) in a secondary or post-secondary institution.

(b) Must have submitted one or more open educational courses to the KCCTE Resource Library.

(c) Must have successfully met all obligations of the KCCTE Resource Library Contributor Agreement (Appendix D).

The KCCTE Resource Library was the chosen site for this study because of my close involvement with the development and maintenance of this OER repository. The description of the contribution process (Appendix C) provided in Chapter One explains a prolonged interaction between myself and each contributor with access to multiple documents related to the contribution process available for data collection.

An important task in case study research is to choose cases that will maximize learning (Stake, 1995). Cases for this study were chosen using a maximum variation strategy (Krathwohl & Smith, 2005; Bloomberg & Volpe, 2016; Creswell, 2013). The goal of this strategy is to select individuals with a wide range of characteristics (Bloomberg & Volpe, 2016). It is important to remember in qualitative research, flexibility is key. I was prepared to make modifications to case selection or the research design, if necessary, in the event one or more of the initially selected cases were unable to accept my invitation, or because of discovery during data collection (Yin, 2018). It is also important to note that representation or generalization is not the goal of the

qualitative researcher. The word “sample” was intentionally left out of this study to avoid confusion with quantitative research and the word “case” was used when referring to the individuals being studied (Creswell, 2013; Yin, 2018).

When reflecting upon the main research question of this study, “Why do CTE teachers contribute their intellectual capital to OER repositories?”, it seemed important to gain an in-depth understanding of this phenomenon by interviewing someone who had contributed often and someone who had chosen to only contribute once. Insight was also expected to be gained by choosing cases from the various CTE content areas from both secondary and post-secondary institutions.

Table 1 provides a list of the individuals meeting the designated criteria at the time of this study. This table displays the following information about each teacher: CTE content area, teaching level, number of contributed courses, and geographical distance from the KCCTE. To achieve reaching the most illuminating information as suggested by Yin (2018), six cases were invited to participate. Studying more than one case increases the transferability of the case study to others. However, the time commitment to analyze and organize the volume of data obtained from each case required this case study to be limited to six cases (Stake, 1995; Creswell, 2013).

Some researchers choose to screen participants before making case selection. This knowledge is important in order to interview the cases which might be the most open and comfortable with the interview process and forthcoming in information. As the coordinator of the KCCTE Resource Library, prior knowledge of these possible cases had already been acquired through the longevity of communications and interactions with them as contributors. The typical contribution process for each contributor takes six to eight months to complete, and I communicate often with each contributor during that time. Due to the time-consuming nature of

the case study procedures, it was also important to consider location when choosing cases. Taking all these factors into account, I chose six cases for this study.

To obtain perspectives of individuals from various career fields (Appendix B), as defined by the Kansas State Department of Education (KSDE), my goal was to invite one person from within each career field. Based on my prior knowledge of the teachers who have contributed to the KCCTE Resource Library, some career fields seem to have more networking and resources available to them than others. Selecting cases from various career fields was expected to increase the opportunity to gain enlightening information about the case based on the variation of courses they teach. To sort the possible participants, the 15 contributors meeting the specified criteria were input into Table 1. There were no contributors for the Public Services career field. The columns of the table were sorted first by content area, then by teaching level, and finally by the number of times each teacher had contributed. The first person from each career field was chosen and invited by email to participate in a face-to-face interview. Taking time constraints into consideration, the most convenient location was the deciding factor when all other factors were equal.

Table 1: Possible cases

ID	Career Field	Teaching Level	No. of Course Contributions	Distance (one way)
01	Agriculture	Secondary	1	70 miles
02	Agriculture	Secondary	1	483 miles
03	Business	Secondary	1	25 miles
04	Business	Secondary	1	291 miles
05	Media & Technology	Post-Secondary	1	0 miles
06	Media & Technology	Secondary	2	104 miles
07	Media & Technology	Secondary	1	109 miles
08	Design, Production & Repair	Post-Secondary	3	0 miles
09	Design, Production & Repair	Post-Secondary	2	240 miles
10	Design, Production & Repair	Secondary	1	120 miles
11	Design, Production & Repair	Secondary	1	120 miles
12	Family & Consumer Sciences	Secondary	5	179 miles
13	Family & Consumer Sciences	Secondary	3	131 miles
14	Family & Consumer Sciences	Secondary	2	57 miles
15	Health	Secondary	2	105 miles

Upon careful consideration of the possible contributors, their demographics, and prior knowledge of the possible cases, the following six cases were invited to participate in the study. All six accepted my invitation, and interview dates were scheduled. If one or more of the chosen cases had declined to participate, I was prepared to re-evaluate the remaining contributors and choose alternative cases.

From the Agriculture career field, two teachers had contributed. Both were secondary teachers who had contributed one complete course. Because all variables were equal between the two contributors, this case (listed as ID 01 from Table 1) was chosen based upon location convenience.

From the Business career field, two teachers had contributed courses, and the case invited to participate (listed as ID 03 in Table 1) was chosen due to location convenience. Both possible cases were secondary teachers and had submitted one course to the KCCTE Resource Library.

There were three contributors who met the defined criteria from the Media & Technology career field. The case chosen (listed as ID 05 in Table 1) was a post-secondary teacher who had submitted one course. As there are fewer post-secondary contributors than secondary contributors, it was expected that this participant might provide insight into the perceptions of post-secondary teachers' willingness to provide content to OER repositories.

From the Design, Production & Repair career field, four teachers had contributed a total of seven courses. The Design, Production & Repair career field includes teachers from the architecture and construction, engineering, manufacturing, and transportation career fields (Appendix B). Three of the possible cases in this career field teach automotive courses, and one teaches drafting courses. Two possible cases teach at the post-secondary level, and two at the secondary level. In an effort to gain diversity, the case chosen for this career field (listed as ID 08 in Table 1) was a post-secondary teacher who had made three submissions.

The chosen case from the Family & Consumer Sciences career field (listed as ID 12 in Table 1) is a secondary teacher who had developed and contributed five courses, the most contributed to the KCCTE Resource Library. The Family & Consumer Sciences career field teachers collectively have contributed 10 courses, the most content submitted by one career field to the KCCTE Resource Library.

The sixth case (listed as ID 15 in Table 1) is a secondary teacher from the Health career field. This teacher has contributed two courses to the KCCTE Resource Library, and at the time of this study, was the only Health teacher meeting the set criteria.

The selection of these six cases was expected to provide insight into perceptions of the experience of contributing OER, and also about information regarding each career field, level of

teaching, and number of submissions made. Table 2 visually represents each case invited to participate.

Table 2: Characteristics of chosen cases

Career Field	No. of Course Contributions	Teaching Level
Agriculture	1	Secondary
Business	1	Secondary
Media & Technology	1	Post-Secondary
Design, Production & Repair	3	Post-Secondary
Family & Consumer Sciences	5	Secondary
Health	2	Secondary

All cases were interviewed face-to-face at their own facility. The KCCTE staff had access to all other data sources necessary (materials submitted, agreement details, timelines, subject matter expert (SME) notes, and communication records) and these were collected and organized.

Selected cases were contacted and invited by email to participate in the study (Appendix F). Informed Consents (Appendix G) and Demographic Information Forms were emailed to the participants before the interview and collected at the time of the interview. Background information about the study, the use of audio equipment, and the methods used to retain confidentiality were also sent by email to each case in an effort to reduce the time explaining these details at the time of the interview. Each interview was scheduled for 1 ½ hours at each case's facility.

Instrumentation

Due to the exploratory nature of this study, there is one broad research question, "Why do CTE teachers contribute their intellectual capital to OER repositories?" I developed an Interview Protocol (Appendix H) to guide the face-to-face interviews in a semi-structured format. It was

anticipated, based on two pilot interviews, that each interview would require approximately 1 ½ hours to complete. The open-ended questions provided on the Interview Protocol were intended to prompt discussion while following a suggested question sequence. This semi-structured format reduces fieldwork time (Yin, 2018). Participants were informed of the intention to use an audio recording device, and I verified permission to record the interview before beginning the interview. All cases were informed that they could stop the interview at any point. By recording the interview, I was able to focus on listening and only needed to make observational memos (field notes) about the behavior and body language of the participant. I discussed with each case before the interview that there were no right or wrong answers, hoping to elicit honest responses. After each interview, I recorded my overall thoughts in a Contact Summary (Appendix J) as soon as possible. As each interview was transcribed, I added questions to the end of the Contact Summary. These questions were prompted by case responses and varied for each case. I was hoping to gain clarification on some responses by these questions. After completing the transcription, the Contact Summary was emailed to the case, asking for confirmation that their perceptions had been interpreted correctly. Additionally, I asked them to clarify the questions at the end of the Contact Summary. All six cases confirmed their responses were captured correctly, and all six cases added clarifying remarks when asked.

The questions on the Interview Protocol (Appendix H) were reviewed and discussed with several colleagues familiar with the study site. Two pilot studies were conducted to confirm that the interview questions provided the needed data to align with the research question (Bloomberg & Volpe, 2016; Sampson, 2004). At the conclusion of the two pilot studies, questions were modified. To my surprise, the two pilot participants reported that the stipend was a much more influential incentive to contribute than anticipated. Upon reflection of the two pilot interviews,

the interview questions evolved to better answer the research question, “Why do CTE teachers contribute their intellectual capital to OER repositories?” An internal review board approval was granted from the University of Arkansas and Pittsburg State University.

Data Collection

Bloomberg and Volpe (2016) explain the four types of information included in qualitative studies as contextual, perceptual, demographic, and theoretical. Each type of information should link directly to the research question. Contextual, perceptual, and demographic information are utilized within this study.

Contextual Information

Contextual information places each piece of data within the context of the study, describing how and why it is being utilized in the study (Bloomberg & Volpe, 2016). A variety of documents are developed through the process of contributing to the KCCTE Resource Library (Appendix C) and data collected from these documents were used as secondary data in this study. All documents are stored in a secure environment within the Pittsburg State University (PSU) network. No personal information from these documents is reported in this study. Documents were collected and summarized in Table 3. This table notes the step in the contribution process (Appendix C) when the document is utilized and collected.

Table 3: Document collection summary

Name/type of document	Part of contribution process with which the document is associated (See Appendix C)
Final Content submission	Step Nine
KCCTE Contributor Agreement (Appendix D)	Step Two
KCCTE Contributor Contract (Appendix E)	Step Two
KCCTE Contributor Log	Steps One through Nine
Email Correspondence	Steps One through Nine
Subject Matter Expert Notes	Step Five
Database Analytics	Step Ten

The final content submission made by the contributor to the KCCTE Resource Library is stored digitally on the PSU network. Originally the use of course contributions to corroborate data collected was considered, but was not needed.

A Contributor Agreement (Appendix D) is discussed with and signed by the contributor during Step Two of the Contribution Process. This agreement is a detailed description of what the contributor is expected to develop and explains the support I provide to the contributor during the development of their materials. After the contributor has signed and returned the agreement, it is stored in a secure environment within the PSU network. This document can provide contextual information about the program's procedures and objectives, but was not needed to corroborate data collected.

A Contributor Contract (Appendix E) is signed by the contributor during Step Two of the Contribution Process, before developing materials for the KCCTE Resource Library. This document is stored in a secure environment within the Pittsburg State University (PSU) network and forwarded to the PSU business office for payment when the contributor has met their obligation to the KCCTE. The contract provides details of the time expected for completion, and the amount agreed upon for delivery of materials. After the pilot interviews, it was anticipated

that the stipend might be a factor in a case's willingness to contribute to the KCCTE Resource Library. This document was used to corroborate data collected during interviews.

The starting date, expected completion date, and the actual completion date are recorded in an Excel spreadsheet (Contributor Log) along with information to record who the SME is for the course, and when payment has been made to the contributor and the SME. This is an internal spreadsheet developed to maintain and track the progress of each contributor. Notations are made in this spreadsheet if a contributor indicates they would like to develop additional materials. Corroboration of collected data was made from memos in this spreadsheet regarding whether the contributor was able to complete the materials by the specified time, or about struggles noticed during the process These notations were helpful in data analysis to reach clarification on statements made.

Communications between the contributor and myself during the contribution process are saved in email format and were available for use during data analysis. While anticipating that these emails might be beneficial in searching for themes that might lead to benefits and barriers of contributing curriculum, I did not use these communications.

After a contributor submits their initial curriculum, a subject matter expert (SME) is asked to make suggestions for improvement to the course. The SME is often a teacher or person from industry from within the same career field. Notes from the SME are sent back to the contributor and the contributor is asked to incorporate these suggestions when possible. These notes were used to corroborate data collected in interviews regarding the contributor's perceptions of the SME review.

When final updates to the resources are made by the contributor, the materials are posted to the KCCTE Resource Library and become available to all registrants of the KCCTE database.

Analytics from the KCCTE Resource Library allow the KCCTE staff to determine how many times a course has been downloaded. Based upon a response from one pilot interview, it was anticipated that this information might be valued and listed as a benefit to contributing. However, no cases commented on this analytic.

Demographic Information

Demographic information refers to a profile of the participant (Bloomberg & Volpe, 2016). A Demographic Information Form was included as part of the Informed Consent (Appendix G) and was sent to cases before the interview. These two forms were collected at the time of the interview, and demographic information was recorded into a matrix (Appendix I) to help with analysis during the findings stage of the study. A completed summary of the demographic information is shown in Table 4.

Perceptual Information

Perceptual information is typically gathered through interviewing the participants and is often the primary data collected (Bloomberg & Volpe, 2016). The purpose of this data is to tell a story of the participants' perceptions, not to state the data as fact. Appendix H was used as the Interview Protocol to guide the interviews in a semi-structured method, meaning some open-ended questions have been developed, but additional topics can be explored as they arise within the interview (Bloomberg & Volpe, 2016). Stake (1995) recommends transcribing field notes within a few hours of the interview to ensure accuracy, and I was able to accomplish this within two days of each interaction. A Contact Summary tool (Appendix J) was utilized to aid in summarizing each interview after transcription. This tool was modified from a suggested form by Miles et al. (2014). The Contact Summary is designed to help the researcher recognize emerging

themes. I also utilized this as a member check, asking each case to verify my perceptions of their responses.

Data Analysis

To bring clarity to the data collection process, recommendations made by Miles et al. (2014) were followed, requiring three actions to happen concurrently during analysis: data condensation, data display, and forming conclusions. Data condensation involves transforming the data as it is collected into a chunked, stronger version. Data display involves creating organized tables and other documents in order to better understand what is happening. Forming conclusions involves interpreting patterns and propositions emerging from the data (Miles et al., 2014).

Data analysis in qualitative research requires both inductive and deductive reasoning (Bloomberg & Volpe, 2016; Miles et al., 2014). Deductive coding can aid in data condensation. This involved creating a list of anticipated codes (Appendix K) from my prior knowledge of the case site, cases, and research question. Data collected from the interviews were chunked and categorized according to the predetermined list of codes. After the transcription of each interview into Microsoft Word, using the list of codes, I highlighted responses and added a comment to that response with a code notation. This process required several readings of each transcription. The predetermined codes evolved during all phases of data collection and data analysis resulting in inductive coding.

Pattern coding, the second step in the coding process (Miles et al., 2014), involved making connections between cases and grouping several codes into one. Often a comment made in one interview prompted me to return to a previously coded transcript and revise my original code. The list of codes was edited as necessary to include the evolving patterns. Some codes

were condensed, and some were expanded into categories as more ideas emerged. These patterns help determine if the assumptions in a case are supported. In this exploratory case study, a workable number of themes was developed.

To enhance transferability and to deepen understanding, a cross-case analysis was then conducted (Miles et al., 2014). A replication strategy, using one case, and then examining successive cases for matching patterns was used in cross-case analysis (Yin, 2018). To perform this step, I used Microsoft Excel. From Microsoft Word, I extracted the comments into Microsoft Excel, using a macro. The macro was programmed to extract comments into a table listing the line number, the highlighted response, and the code. I was able to then copy that table into an Excel spreadsheet, including a column to identify the case. From that point, I was able to sort and filter responses by code. This made cross-case analysis manageable, and patterns were easily noticed.

Responses were input into Data Summary Tables, chunked by noticeable patterns (Appendix N). The Data Summary Tables provided a visual representation of codes that seemed significant based on the number of cases who responded in each code category. Being able to see this visually aided in condensing the codes even further. By combining and expanding some codes into new categories, a final list of codes was created and is shown in Appendix M.

Moving into the conclusions stage of the research, triangulation was used to corroborate findings, strengthening the case (Stake, 1995; Yin, 2018). Data triangulation was accomplished when verification by multiple sources of data reached the same conclusion. In this case, the archived secondary data sources collected was triangulated with data collected during interviews. Colleagues close to the program were also invited to confirm inferences and findings, adding

strength to the triangulation process. When reorganizing codes, I often referred backed to transcripts to review the comments and the context, to verify correct coding was being made.

Findings continued to emerge during triangulation as well. It was through verifying context and a discussion with a colleague that I was able to see clarification on grouping all past experiences together to form Finding 1. This process was time consuming and non-linear, but productive, ensuring this study was completed using a thorough data analysis process.

Limitations of the Study

Limitations are those factors that might weaken a study (Rossman & Rallis, 2012). The following limitations were present in this multiple-case study which might affect the transferability of this study.

- Teacher preparation methods were not investigated in this study.
- Administrative support was not investigated in this study.
- School environment was not investigated in this study.
- Socioeconomic status of various school districts affiliated with cases was not investigated in this study.

The Researcher's Role

The researcher's role in qualitative research is an active one (Bloomberg & Volpe, 2016). The primary method of data collection for this study was through face-to-face interviews. The success of the interviews depends upon the interaction between the participant and the researcher, and therefore, must be carefully planned (Bloomberg & Volpe, 2016; Stake, 1995). Following recommendations of experts, two pilot interviews were conducted to develop and refine questions for the case interviews (Bloomberg & Volpe, 2016; Creswell, 2013; Sampson, 2004; Stake, 1995; Yin, 2018). The two pilot cases were selected from the contributors based on

location convenience and the interviews were conducted face-to-face, allowing me the opportunity to practice interviewing and improve skills necessary to probe and gather richer information. Stake (1995) stressed the importance of listening as a key characteristic of obtaining substantial information in an interview and I was able to practice active listening during the two pilot interviews.

The researcher conducting a qualitative study must be flexible and willing to change the design as data is collected (Bloomberg & Volpe, 2016). The overall objective of qualitative research is to bring meaning to an experience, requiring the researcher to be involved in the data collection process and willing to be reflective in the report. Creswell (2013) describes a rigorous process of data collection in qualitative research which requires persuasive writing by the researcher. Entering this study with a full understanding of what was required of the researcher, and a fully developed plan, allowed me to bring trustworthiness to the study.

Trustworthiness

It is important in qualitative research to provide evidence of reality in the situation and the persons studied. The terms “credibility”, “dependability”, and “transferability” are suggested by Bloomberg and Volpe (2016) to reassure the reader that the study has value and is significant.

Credibility

Parallel to validity, credibility in this study was maintained in several ways. Triangulation of the data was employed by corroborating information provided by the cases and the conclusions made by the researcher. By collecting several forms of data, and comparing these data, triangulation lends credibility. In this study, triangulation occurred through the comparison of data collected during interviews with documents created and developed during the contribution process. Contact summaries were sent to participants to comment and edit, ensuring

that my perceptions were an accurate representation of the case responses. These are considered "member checks" (Bloomberg & Volpe, 2016) and are another form of triangulation.

To reduce the risk of researcher bias, debriefing with two colleagues was utilized during data analysis as recommended by Bloomberg and Volpe (2016). One colleague, a graduate assistant, who works closely with the KCCTE Resource Library process, coded each interview at the same time I was coding. We then compared our codes and examined differences. This process allowed me to think critically about why I chose specific codes for responses. Again, this same graduate assistant worked with me closely during data analysis, offering suggestions for grouping codes and developing themes. One other colleague, a faculty member within the Technical Teacher Education program (affiliated with the KCCTE) reviewed my findings and Data Summary Tables, asking questions and offering suggestions during the findings stage. This colleague is knowledgeable about Career and Technical Education as well the KCCTE Resource Library. These steps led to alternative ways of interpreting the data (Bloomberg & Volpe, 2016) and assisted in removing researcher bias from the study, lending credibility to the study.

Dependability

Parallel to reliability, dependability refers to the description of the collection processes and the interpretation of data in order to provide an "audit trail" (Bloomberg & Volpe, 2016). To create an audit trail, I recorded data into several tables. The List of Final Codes (Appendix M) combined with the Data Summary Tables (Appendix N) allow the reader to have insight into the process involved in coding transcripts, finding themes, and leading to findings. Member checks were used to confirm case responses were perceived correctly. Colleague confirmation of the coding and data analysis processes, inferences being made, and findings reported reduced the risk of researcher bias and increased the dependability of this study.

Transferability

Even though qualitative research is not expected to be generalized, I attempted to provide as much context as possible to enhance transferability. By including details of the contribution process used by the KCCTE, context was given about the complexity of the contribution process for teachers who commit to sharing their instructional materials. Context of case responses was provided by explaining situations referred to when reporting direct quotes in the findings of Chapter Four. Methods limitations were addressed in Chapter Five, providing another point of context. These points of providing context allow the reader to judge if the processes used in this study might be plausible in another study (Creswell, 2015).

Research Strategy

Yin (2018) explains the four general strategies that will aid the researcher to ensure data is able to be analyzed after collection as (1) Relying on theoretical propositions, (2) Working your data from the ground up, (3) Developing a case description, and (4) Examining plausible rival explanations. Working from the ground up, an inductive process, allows the reader to pour through the data, looking for concepts you may not see if using the theoretical proposition strategy. Employing this rigorous inductive approach to analyze data included creating themes, codes, pattern codes, and peer triangulation and allowed for a thorough data analysis process to take place.

Managing and Recording Data

To aid in the organization of data as it was collected, a Case Accounting Log (Appendix L) was developed and maintained as suggested by Miles et al. (2014). This log aided in organizing the interactions with each case and was a method for tracking the collection of documents. As documents were collected, they were stored on the PSU secure network.

Chapter Summary

This chapter describes the methodology designed for this study. An exploratory qualitative multi-case study was designed to explore why Career and Technical Education (CTE) teachers are willing to create and share instructional resources with others. The site selected for the study was the Kansas Center for Career and Technical Education Resource Library, a repository for open educational resources specifically created for CTE teachers. The participants were selected from contributors who have met the designated criteria. Case selection strategies for face-to-face interviews were discussed, and a description of various documents for data collection was provided. Data analysis, issues of trustworthiness, and limitations of the study were also addressed. Chapter Four presents a demographic description of the cases and the Findings of the study.

CHAPTER FOUR

Findings

The purpose of this case study was to understand why Career and Technical Education (CTE) teachers contribute to open educational resource (OER) repositories. By understanding the factors that influence teachers' willingness to contribute to OER repositories, evidence-based decisions can be made when determining sustainability needs of such resources. This chapter will present the findings of the study divided into two categories: (1) a brief description of demographics of the six cases, and (2) the major findings from the study.

Demographic Description of the Cases

As described in Chapter Three, this study was designed as a multi-case study using maximum variation strategy to choose each case. The intended goal for utilizing maximum variation strategy was to invite cases to participate who could offer a broad range of perspectives because of their diverse characteristics. Cases were chosen from a variety of teachers based upon their teaching content, their teaching level, and the number of courses contributed to the KCCTE Resource Library.

As the coordinator of the Kansas Center for Career and Technical Education (KCCTE) Resource Library, an OER repository, I had facilitated the process for all previous curriculum contributors. This provided the prior knowledge necessary to guide the decisions for bounding the case study with the following criteria:

(a) Each case must currently be teaching Career and Technical Education (CTE) course(s) in a secondary or post-secondary institution.

(b) Each case must have submitted one or more open educational courses to the KCCTE Resource Library.

(c) Each case must have successfully met all obligations of the KCCTE Resource Library Contributor Agreement (Appendix D).

After compiling a list of all possible contributors, and then sorting this list by the criteria set, there were 15 possible cases (Table 1). Using maximum variation strategy, six cases were invited by email (Appendix F) to participate. All six invitations were accepted, and face-to-face interviews were conducted at each case's institution. A numerical code was assigned to each case based on the order of the interviews. A signed Informed Consent and a Demographic Information Form (Appendix G) was sent to each case by email before the interview date and collected at the interview. Table 4 contains a summary of the case demographic data collected.

Table 4: Case demographic data

Case	Gender	Age	Education Level	Teaching Experience (Years)	Teaching Content	Teaching Level
1	M	31-40	Master	6	Media & Technology	Post-Secondary
2	M	51 or above	EdS	38	Design Production & Repair	Post-Secondary
3	F	31-40	Master	16	Business	Secondary
4	F	41-50	Master	8	Health	Secondary
5	F	22-30	Master	7	Family & Consumer Sciences	Secondary
6	F	22-30	Master	4	Agriculture	Secondary

As indicated in Table 4, one case from each of the Kansas Careers Model (Appendix B) except Public Services was chosen for interviewing. At the time of the study, there were no submissions in the Public Services career field. Of the six cases interviewed, four were secondary teachers and two were post-secondary teachers allowing for exploration between these

two groups. Although gender, age, and years of service were not part of the sorting criteria when choosing cases, Table 4 shows a diversity in all three factors. The four secondary teachers were female, and the two post-secondary teachers were male. Two teachers were in the age range of 22-30; two teachers were in the age range 31-40; one teacher was in the age range 41-50; and one teacher was in the age range 51 or above. By having a diversity of these factors, I was able to have a richer exploration of possible factors that influence teachers' decision to contribute their intellectual capital to OER repositories.

Summary of the Findings

All six interviews were rich in details regarding the experiences of the individuals contributing materials to the KCCTE Resource Library, and responses made were coded into two major ideas as shown in Appendix M: Contributing Factors and Processes. These two areas were then broken into major categories, determined by analysis of the data from the transcribed interviews. The idea, Contributing Factors, contains the categories coded in direct response to the research question guiding this study, "Why do CTE teachers contribute their intellectual capital to OER repositories?"

Four categories emerged within the Contributing Factors idea as significant based upon the number of responses in these categories: previous experiences, benefits, barriers, and tie with entity. These categories were then broken into subsections as new data were collected and analyzed. When necessary, the subsections were broken into more specific themes or comments. When possible, similar ideas were merged into one category or subsection to condense the list of codes. A full description about the development of these codes is presented in Chapter Three. Four major findings with several subsections emerged from this study

1. All cases expressed an understanding of the significance of contributing to OER as a result of a previous experience as a CTE teacher.
2. Most cases expressed the importance of a stipend as an influential factor in their willingness to contribute to OER.
3. All cases indicated time as an influential factor to be weighed when committing to contributing their materials to OER.
4. All cases reported a previous tie with the entity as an important factor in their decision to contribute to an OER repository.

The following discussion contains details to support these findings organized in thematic sections corresponding to the four findings. Direct quotes from the interview data will be used to support the findings and give the reader a better sense of the richness of the data gathered. By capturing the perspectives of these cases, and reporting direct quotes from the data, it is my intention to provide a glimpse of the reality of these CTE teachers' daily lives, and why they are willing to contribute their intellectual capital to OER repositories.

Finding 1

All cases (6 out of 6 [100%]) expressed an understanding of the significance of contributing to OER as a result of a previous experience as a CTE teacher.

Table 5: Responses to previous experiences

Subsection	Themes/Comments within Subsection	Cases who Reported this Theme/Comment
Professional experiences	Legacy	02, 04
	Opportunity to be part of the OER movement	01
Challenging experiences	Curriculum development	01, 02, 03, 04, 05
	Extra duties	02, 03, 04, 05
	Lack of resources	01, 02, 03, 05
	Teaching workforce skills/ hands-on teaching	01, 02, 03, 04, 06
	Time required outside of school day	02, 03, 05
Networking experiences	Formal sharing	01
	Informal sharing	02, 05, 06
	Mentoring	04, 05

Teachers provided various responses to the question, "Why did you initially choose to contribute to OER?" I did not see a common thread until I had transferred all codes into the Data Summary Tables for data analysis. At some point throughout every interview, each teacher seemed to indicate an understanding of the importance of an OER repository. This understanding seemed to originate from a previous experience as a CTE teacher.

One teacher reported that the primary factor in their decision to contribute was the importance of sharing the knowledge they had acquired from their years of professional experience. Another teacher expressed the contributing factor as an opportunity to be part of the movement of OER. While almost all teachers reported the challenges of curriculum development for CTE teachers, two teachers expressed the initial contributing factor as an opportunity to help

themselves be more organized by developing a more detailed curriculum, and one expressed the desire to help other new teachers who might be facing challenges. Another teacher expressed the primary contributing factor as a perceived benefit for others, reporting a desire to give back.

> There's just that altruistic piece of, I have a lot of knowledge to share…And what an amazing thing for me to be able to go through the creative process of building a lesson from that information, and then share it with somebody else. That feels like the right thing to do to me. That's what motivates me. And that's part of why I do this, you know? (Interview 04)

> Initially it was about spreading that education; now, it's become a lot bigger than that. Once I got into OER, and I started realizing the potential benefits and the massive downfalls to our current system. Now it's become this thing where "Hey, we need to do this because I just want to be part of the movement; because we need to do it to not only educate people about OER, in general, but because this literally saves taxpayers money! This absolutely has a massive impact on society as a whole. (Interview 01)

> I would say I wanted to contribute probably first and foremost, for my own personal benefit, which would be to get myself organized. And so, I was like, this will be an awesome way to get all of my lessons organized in folders and have someone else look over it for me. I mean, I loved it when I got the feedback. (Interview 05)

> When I sat down and started doing it, it was very beneficial for me, because I had all my lessons, but not that organized. Now it's all organized. All the resources are together. And so it helped me not only have all the material but then get it more organized. (Interview 03)

> Because I look back on my early experience, I don't think anyone should have to start by themselves without any kind of support. And it's very, very needed. And so, yeah, I'm happy to contribute. (Interview 02)

> Well, Ag teachers have given a lot; we try to help new teachers get started as much as we can because we've all been there. So it was nice to be able to give back and share some of the resources that I've been given, and reinvented and revised, and whatever the case might be. That's kind of where I came from with it. (Interview 06)

While I didn't specifically ask a question about the importance of contributing to an OER repository, this perceived understanding emerged through data analysis. As an integral part of the interview process, my role as the interviewer became evident in this part of the analysis. I could sense and feel the passion that each teacher possessed as they discussed their previous experiences and their desire to contribute. During each interview, I made field notes during such times, and was able to refer back to these notes during coding and data analysis. Eventually, the Previous Experiences category evolved into three subsections to gain more clarity in this line of reasoning and analysis: professional experiences, challenging experience, and networking experiences.

Professional experiences. Three teachers (50%) reported a desire to share their knowledge acquired through an extensive professional background. I coded these comments as "legacy" or "OER movement" because of the importance these three teachers placed on providing knowledge for others that might be lost otherwise. The following quotes indicate the level of passion these teachers have about their reasons for contributing:

> This is a labor of love. Some of the things that I'm sharing are lessons that I just love to do; kids enjoyed them. If it is something that you saw kids getting especially engaged in,

that needs to be shared. Because if it worked for one, it will probably work again. (Interview 02)

I have a lot of knowledge to share. And I'm developing stuff all the time. And I've got like these piles and notebooks and, and things that I've been generating. It's nice to think that what I've created is out there for someone else who's in that place of, “I need to get something started.” So that feels really good. And I know I was talking to one of my colleagues, who's young, yesterday, and she's been in super generator creator mode, and she doesn't feel ready to share. And I said, "That's okay, that's all right." And I said, "I do feel ready to share. Maybe it's a different place I'm in as a professional, maybe it's because I am 20 years older than you. Maybe it's because I really see that, you know, life is short. And if I've got something that could be meaningful for someone else, I really want to get it out of my brain and out there for the world." (Interview 04)

Challenges of CTE teachers. The challenges reported for CTE teachers supports research done prior to this study and discussed in detail within Chapter Two. Supporting research, various challenges were reported for the CTE teachers interviewed in this study, and these are listed in Appendix M. The most common response in this study related to the time required to develop CTE curriculum that is relevant to the students. Several reasons were reported for this challenge. Five out of the six teachers interviewed (83%) reported that there is a need to be hands-on in their respective content areas to bring relevancy to their coursework. All six teachers interviewed (100%) reported that they create their own curriculum. Four teachers (67%) reported that there were textbooks available in their content area, but they chose to build more meaningful lessons for their students tailored to their students’ needs utilizing the facility and equipment they have available. Two teachers (33%) reported that no textbooks were

available in their content areas. The need for creative, engaging content and the fact that equipment and facilities vary, makes it difficult to simply teach from a textbook.

This curriculum development process leads to challenges for CTE teachers, especially new teachers, and seems to deepen the understanding of the need for OER repositories. Most of these reported challenges regarding curriculum development resulted from the questions asked, "What have been your previous experiences accessing open educational resources?" and "How did these experiences (positive or negative) influence your decision to contribute to an OER repository?" Because of the responses given, I was intrigued about these curriculum development challenges, and was able probe for further understanding throughout the interviews. Direct responses (see Table 5) regarding the lack of resources, and the need to develop engaging hand-on curriculum relevant to workforce skills are reported below:

> Really, because of my discipline, almost everything is OER because we're very project based. We don't use textbooks very often at all, the majority of the knowledge that most of us have, we've learned through just on-the-job-training. (Interview 01)

> But I know in my class, personally, I'm not a textbook teacher. And so there are some textbooks, I think the most recent one in my classroom right now is probably like a 2000 or 2004 or something like that; definitely, all of them are over 10 years old (Interview 05)

The second important factor to this challenge of developing engaging curriculum for students is the time required to do so. Time was a recurring theme reported during this study by all cases (see Table 5), but specifically addressed by three teachers regarding their previous challenges in developing curriculum. Two teachers directly referred to their experience as a new teacher.

> I vividly remember starting teaching and having nothing and relying on others to help. As a new teacher, you're just struggling to manage classroom things, let alone, now you've got to create curriculum, and from my standpoint, if I had not been told to give teaching two years, I would've quit the first year and I understand why they tell you that and it shouldn't be that way. So, you know, I kind of feel strongly that if you're going to go into teaching to start with you're already taking a cut in pay, and especially in the automotive area. You've got skills that are very, very marketable. And to make it hard on you, to start with, is just asking for people to leave the profession before they even get started.
>
> I would hope that any veteran teachers out there would jump on the opportunity to share what they have. I think most of us have the same story as I have starting out and struggling. (Interview 02)

> Very overwhelmed. Because I did not have curriculum ready for me. I wish writing curriculum was required before you graduated college with your undergrad…I remember as an undergrad doing a scope and sequence and doing a lesson plan. Maybe it was just one lesson plan. But that does not compare to what you do as a first-year teacher. You know, that's one lesson plan. Well, one lesson plan is 50 minutes, right? For one hour out of your day. (Interview 05)

In an attempt to gather more information from Interview 05 about this challenge, I asked what time she normally left school as a new teacher, and her response was, “I would say around suppertime, probably five or six and I live 30 minutes away. I was probably at the school 12 hours a day for my first semester.”

As a veteran teacher, Interview 03 reported a recent equipment change in her program resulted in the challenge of having a lack of resources and the need to develop new curriculum.

She reports a feeling of isolation and the stress of spending her entire summer developing new curriculum.

> It ruined my whole summer. It was awful, my family suffered; my friends suffered. It was awful!...No one else is having to go through this. English will always be taught as English; Math will always be taught as Math. And my subjects change every year. I mean, we always change, everything's changing, which is fine. Where most people have either a resource of a textbook or something out there that they can start with, or even if you don't have them, you have something you can look through as a guide. Or you can call another business or computer teacher or you can call the universities, which I did. I called every university and junior college in the state of Kansas. And nobody could help me because nobody had even heard of that. (Interview 03)

Another teacher also reported a program change experience as the need for her to develop new curriculum. Putting her response into context, my field notes indicate that she responded as if this were merely a motivating challenge, not necessarily a stressful challenge.

> At that time, they had just made Career and Life Planning required for our school. You have to have it before you graduate high school, which for me was like, “This is amazing! One of my classes, the Board of Education feels is so important that they're going to require it.” And so I was like, “If anyone ever wants to come in and see what we're teaching, I want to be able to show them. These are the units, these are the standards, these are my objectives, these are how I’m hitting these, and I want it to be a relevant and rigorous course.” (Interview 05)

This teacher reported her primary reason for contributing as a method of organizing herself. Interestingly, she has made the largest number of contributions to the KCCTE Resource

Library, including five courses, and three subject matter expert reviews. Also noteworthy, this teacher informally shared materials often before contributing to the KCCTE Resource Library, which seems to be altruistic in nature.

Networking experiences. This subsection includes mentoring experiences, formal sharing of OER, and informal sharing of instructional materials. Two teachers (17%) reported that contributing to an OER repository opens the opportunity for them to be a part of a professional network, and three teachers (50%) reported that before sharing with the KCCTE Resource Library, they shared informally with colleagues. Four teachers (67%) reported having mentors that shared resources with them as new teachers. All three of these themes in the Networking Experiences category seem to indicate a deeper understanding of the significance of contributing to an OER repository.

Formal sharing. This theme was used for coding reports of networking benefits perceived as a direct benefit from sharing intellectual capital to an OER repository. One case reported an extensive background in OER and copyright laws. This knowledge motivates his decision to continually contribute to OER repositories. He reports the primary benefit of his contributions as being part of a professional network.

> I am more well-known now, because of OER, than I would have been previously…. Because I license things with attribution, people just naturally have to see my name whenever it pops up. So things like that helps me professionally because it gives me more credibility…And that's been, without a doubt, the best side effect, the best benefit, to me professionally. (Interview 01)

One teacher reported that being connected to the KCCTE Resource Library feels like being part of a family. When prompted by follow-up questions, she reports this network as important to both contributors and users.

> For me, you know, just being able to know that I'm helping somebody else…I especially have a brand new outlook after all this change. And I tried to put that [curriculum submitted to KCCTE] into like a first year teacher's perspective, because most of us who have taught 15 years or more, we've taught Entrepreneurship, and we're used to this [change]. But first, second, and third year teachers, it is kind of like throwing sheep amidst the wolves when they've never been teaching this or ever student taught it. So I think that personally wise, I'm glad that I was able to maybe help or have the opportunity to help others. I would never have survived this. If I were a first year teacher, I would be done in teaching. I would never go back. (Interview 03)

I followed up this comment from Interview 03 by asking if she thought having access to materials like she contributed to the KCCTE Resource Library makes a difference in the retention of teachers and she replied, "Oh, yeah. Oh, definitely. I mean, if you're on an island like I was." She continued with the following:

> I think everything I have felt, I feel like part of a family. So because you've been so wonderful, and able to answer questions, and, and I feel like I'm doing somewhat of a good job… So I feel like more of a network. I like that. That's my thing. (Interview 03)

Informal sharing. A second theme emerged within the Networking category and was coded informal sharing. Four teachers reported that they shared resources with colleagues before contributing to the KCCTE Resource Library. After their contributions, they are now able to

send teachers to the repository to access their materials. This alleviates the need to bundle and email their materials or mail a flash drive.

> But after being a first-year teacher, and then having first year teachers ask me, “Hey, can I borrow stuff from you?” And I would say, “Sure, send me a flash drive, and I'll put it on there.” Or, “What units are you covering?” It is so much easier now to say, “Absolutely! I actually have all my curriculum done. And I don't have to send you a flash drive or anything; you go to the website, you download it, and it's ready to go for you.” That has been really nice, because I feel like I'm helping people by giving them my curriculum. But the work is done for me; that you guys are distributing it and things like that. (Interview 05)

> When you guys [the KCCTE Resource Library] came along, we were able to share and get it out there. The ones that we normally just email back and forth to each other; this is kind of in a more centralized location this way. So that’s really helpful. (Interview 06)

Interview 02 mentioned that he informally shares his lessons with new teachers, but by developing his curriculum to the specifications of the KCCTE Resource Library Contribution Agreement (Appendix D), he is updating the curriculum to be more innovative for today’s teachers. He says, “If I had an individual teacher come up and say, “I'm starting to teach,” you know, I would share whatever I had. But it's what I have, not something I would create new, probably.”

Mentoring. The final theme emerging from the Network category was the reporting of the appreciation of a mentor in the lives of these teachers. Codes were assigned to comments that related the resources shared by their mentors leading to the willingness of these cases to now share their resources.

Interview 06 reported that the experience of what others did to help her as a new teacher led her to feel like she should give back to others. She stated, “I just wanted to give back to Ag Education because they’ve given me a lot to get started too.” Two teachers reported their experiences as new teachers as the reason they chose to share their resources now.

> It wasn't any one mentor [that helped me]. It was a variety of people, like for all the grading and all that stuff, there was one fabulous woman in the office. Another person I know I talked to about, just sort of how to keep the pace. The kids are here for two and a half hours. There was an initial sort of panic, like, what do I do over two and a half hours? (Interview 04)

> And student teaching, I felt like helped a little bit because I could watch another teacher. Although she only had two preps. And so together we had two preps that semester. And then when I started teaching here, I had six so that was a big adjustment, but I could take some of that information from her. And she let me put stuff on flash drives and use it. So I have six preps and I have five days a week. I mean, I need 30 lesson plans. And as a first-year teacher, that’s so overwhelming. If I could have come in as a first year teacher and downloaded these six things [courses] and just made the changes instead of starting from scratch. Wow, my life would have been a lot easier! (Interview 05)

Finding 2

Most cases (4 out of 6 [67%]) expressed the importance of a stipend as an influential factor in their willingness to contribute to OER. All six teachers (100%) reported that the stipend was appreciated (Table 6). Two teachers (33%) reported that they would contribute without the stipend. Four teachers (67%) reported that while the stipend was a secondary factor, they were unlikely to contribute without the stipend.

Table 6: Responses to stipend

Subsection	Cases who Reported this Subsection
Necessary	02, 04, 05, 06
Not necessary	01, 03
Appreciated	01, 02, 03, 04, 05, 06

Stipend is necessary. Four teachers reported that the money was an important factor in their decision to contribute, though they did not report this as their primary reason for contributing. When asked, “What impact did monetary incentives have in your decision to initially contribute?”, Interview 02 responded, “Some. I mean, if I'm going to spend my summer doing it, I needed to show something for it. It does make it get done.” He continued after follow-up questions with the following:

> I mean, if somebody needed something, and they approached me and said, "I need this; can you produce it?" Yeah. Would I produce the whole thing? Probably not to the level that I'm doing now. But I would offer whatever I had. So that in the initial thing, no. But to make a finished product, yes. That takes a whole lot more time. And to justify that, I need to show something besides that to finish. Otherwise, I'm looking at I'm spending this time, and yes, it's very noble to help the other person. But at the same time, it's time I need to be spending doing my own job, and taking care of my own things, and still having time for family and things like that. (Interview 02)

> And that [being paid a stipend for contributing] felt, it felt respected. Like you're respected for the knowledge you're sharing, and that you [KCCTE] know how much time it's going to take. (Interview 04)

> Well, it would have been hard to do it without a pay. So if I'm being honest, offering the stipend that goes along with it was really helpful. And as a new teacher, you know, anytime you have the opportunity to make some extra money, that's obviously good. All of the things we do aren't for the money, the FCCLA, and the STUCO, and things like that. But when you have the opportunity to make extra money, that's really good. So I think that helped motivate me to kind of want to keep going. Sometimes when you're doing something over and over again, and it's for free, you're like, "Okay, I think I'm going to take a break from this." But it's like, you know, "I'm making some extra money. I'm benefiting myself." (Interview 05)

I felt this response was worth investigating and asked, "What if I came to you next year? And I said, "Oh, the state cut our budget. Would you want to do another class? But oh, by the way, we can't pay you now." Her response was, "I would, I would probably say, "I'm really busy. And I probably am not going to be able to."

When I asked Interview 06 if the stipend had an influence on her decision to contribute, her response was:

> I mean, yes, if I'm going to be honest....Yeah, it definitely did. When you are in the middle of summer, and you have some spare time, and you can make some extra money throughout the summer; it's always nice. And it was really nice to be able to find something that was related to my career field. And at the same time being able to, I always keep saying this, help others in the Ag Education field too.

Stipend is unnecessary. Two cases reported they hope to contribute more and will do so without a stipend. Both teachers, according to my field notes, were adamant in their responses. Both reported they were appreciative of the stipend and that the stipend was a reward for the cost

of contributing their time. Contradictory to this, Interview 01 reported that he would prefer money in his professional development fund at the university. This would allow him to use the funds to grow professionally.

> Every time, and I should get over this, I suppose, but every time I hear about getting paid to create OER, I'm just like, "Oh, really?" It's counter-intuitive to me… So my personal opinion is that I don't think about getting paid for doing it. Is money a nice motivator? Sure. I don't think anyone will tell you otherwise. That it's not going to play into motivation. But the question of would I have done it without the money, absolutely, I would have done it. And I'm going to continue to do it. (Interview 01)

> Well, it definitely helps. But again, if the money wasn't there, I would still contribute. It's very nice, I appreciate it. Because again, teachers are very unappreciated, and people just assume that we should do all this other stuff. And as you know, we're all working 5,000 other jobs and trying to do all this other stuff. But no, it helps tremendously for the money. But again, I did not know that [there was a stipend] at the beginning, so I would still contribute. (Interview 03)

Stipend is appreciated. All six cases reported that the stipend was appreciated. While all teachers placed a different level of importance on the stipend, they seemed to indicate it was rare for them to be rewarded with a stipend for accomplishing extra duties. As indicated above by Interview 03, many teachers do other work for extra income, and this stipend was a tremendous help to her.

Finding 3

All cases (6 out of 6 [100%]) indicated time as an influential factor to be weighed when committing to contributing their materials to OER (Table 7). Regardless of previous experiences,

or the perceived importance of a stipend, time was reported as an important factor in the decision to contribute intellectual capital to OER. As a recurring theme in the coding process, time was broken into three subsections. Three teachers (50%) reported that time was a preconceived cost before their initial contribution. Six teachers (100%) reported that time was an actual personal cost of contributing OER, and four teachers (67%) reported that time was an actual professional cost for them.

Table 7: Responses to time

Subsection	Cases who Reported this Subsection
Preconceived cost	03, 04, 06
Actual Personal Cost	01, 02, 03, 04, 05, 06
Actual Professional Cost	01, 02, 03, 06

Time as a preconceived cost. Most cases reported their current lesson plans are not as detailed as what they choose to share with the KCCTE Resource Library. To create lesson plans that were fully developed, organized, and detailed enough to have value for someone else required many hours. Interview 05, who has contributed five courses to the KCCTE Resource Library, reports that each course took a different amount of time to develop for contribution depending on the course, and how fully she had already developed it.

Because of the time commitment, three cases reported weighing the preconceived cost of time before agreeing to contribute.

> Time. Do I have time? Oh, my gosh, I have so much I'm doing. Am I really, seriously going to dedicate time to this? And I decided, "Yes, I would. Yes, I would." And I think that you and I worked together so my deadlines were in the summer, or maybe that was

just the way that your budget worked, or something, which was beautiful. So that felt really good. I mean, that was nice timing too. Because during the school year, and you know how it is and it's like, my, my work just exponentially grows. And I feel like I get a handle on something. And, just like now, I was feeling that I was really grooving, I'm making this major progress; and then one of my colleagues, whom I love, who helped me so much in the beginning, he asked me to do the professional development tomorrow. So I'm teaching our staff tomorrow. (Interview 04)

So, basically, you know, for me, it was finding the *time* to do it. I was very overwhelmed at the beginning of the summer because you are winding everything down with FFA, and in the shop in an Ag Ed program. But once things slowed down, you are able to find things and kind of balance it more out in the summer. But most of it was just finding the time and making sure you are providing the best you can for people to look at. And going back and making the best edits you can so that you have that quality resource available for others. (Interview 06)

Actual personal costs. All six teachers reported time as a personal cost, citing time away from family as the most critical consideration. The following responses were recorded when I asked the question, "What personal costs did you encounter when developing curriculum to contribute to the KCCTE Resource Library?":

When I'm at home doing it, those are personal costs, and the costs there are time away from my family. And so if I get to the point where I'm working too much on something at home, then it has heavier personal costs, and I am less likely to want to do it. Because I don't want to miss out on the time with my family. (Interview 01)

> You know, really, money wise? Nothing. Time? Yes, because I come out here to work. But I have a five-year-old and a two-year-old. Well, four and one last year, so there was not much, I couldn't do much at home without, "Mom, Mom, Mom." So time; but it wasn't like overwhelmingly awful worth of time. So that would be very minute. So other costs? No, nothing. (Interview 03)

Actual professional costs. Four teachers reported time as a professional cost, and two teachers reported that time was not a professional cost. Interview 06 reported that she had several units fully developed for a course in her Master degree, and only had to transfer most of the curriculum to our templates. Because of this, she did not feel like the time was overwhelming even though she reported time as a cost. When questioned if time was a personal or professional cost, she responded, "For the most part, it's probably just the same. It just kind of mixes; it's just what I do."

Others responded to professional costs as follows:

> Time. Time away from developing my own curriculum. But that's why I typically only do this during the summer, mainly as a step back away from what I'm normally doing, just to mentally take a break from that and move on to something else. (Interview 02)

While Interview 01 reported time as a barrier, he stated that time was not an actual cost for him.

> It comes down to a manpower issue of how much is your time worth? I personally, again, I don't see my time, I don't see a dollar amount on my time….If I'm getting paid to be here and be a facilitator of knowledge anyway; this is just part of who I am and what I do. If I wasn't a teacher, I might not have as big of an emphasis on it. Because I might be having to work, literally spend those hours working for a client or a boss.

This same teacher, when asked if time was a professional cost, reported a perceived difference in this cost for secondary and post-secondary teachers.

> The time, I know (and I'm sure you're the same way) from research I've read, and from colleagues I've talked to about OER in general, time is almost always a restraint. And I feel like, I don't know, but I feel like that comes in a lot at the K-12 level, because teachers are a little more structured at that level. Here, at our level, at the post-secondary level, I feel like you're given a lot of freedom….Whereas, for the K-12 teacher, it's much more structured. This is what you're doing, and here are these various days throughout the semester where maybe you can do professional development and catch up on this and that. So it's definitely very different. (Interview 01)

Because there seemed to be a variation in the perceptions of the cost of time, I wanted to analyze data to determine if the benefits outweighed the costs. The following data emerged when I conducted a search of the transcripts:

> The time is still a personal cost. And it's one I have to weigh constantly, but that's always a given. Doing this doesn't add gray hairs; teaching adds gray hairs. Writing curriculum, I kind of enjoy the challenge. (Interview 02)

> I don't think there were any costs; it just took time. And it was something that I was willing to spend time on, because I knew the benefits. And I knew there were incentives that came along with it. (Interview 05)

Related to the previous investigation, I conducted a word search of the transcripts looking for phrases regarding time as a barrier. One question asked was, “What barriers do you have to contributing again?” Five cases reported time as a barrier.

> Just the schedule. Yeah. And not being familiar enough with the new material [referring to her equipment changes in the past year]. But give me a year and I'll whip it out! (Interview 03)

Interview 02 reported that summer was an important time for him to do his curriculum development. While he's contributed three times to the KCCTE Resource Library, he states, "I'm willing to share. But if it costs me more time that I don't have, I probably won't."

Interview 04 also mentioned the benefits of having the summer to develop curriculum away from the schedule of the school year. However, in response to contributing again, her was response as follows:

> Before I would say yes to another repository request, I have to finish some big work that I've got on my plate…I need to have balance in my life. I am a mom and a wife and a friend and a daughter. And my dad's going through some big health challenges, and I'm in that place of supporting them. So how much time is realistic for me? (Interview 04)

Interview 05, contributing five courses to the KCCTE Resource Library, has a somewhat contradictory statement about time when compared to other responses, "I wouldn't say time is a barrier, because you kind of know that's part of the agreement. It's going to take you time to do this. And in that, you're getting paid to do it."

Interview 01 also had a contradictory response when compared to other cases. My question was, "So are you telling me the time is not a big enough cost to keep you from contributing?" His response was, "It never will be." My field notes report that he was definitive in his response.

Interview 06 mentioned that her first response to contributing was negative until the school year was complete, and then she was able to rethink her initial decision. Even still, while

reporting that her time was not an overwhelming cost she states, “You know, I’ve thought about contributing again, but, with time and making sure that all my resources are put together as good as possible, I think those would be the two biggest barriers that would slow me down a little bit now.

Finding 4

All cases (6 out of 6 [100%]) reported a previous tie with the entity as an important factor in their decision to contribute to an OER repository. Two teachers (33%) reported a direct tie with the KCCTE Resource Library through Pittsburg State University, their alma mater. Five teachers reported ties to other programs, and therefore, knowledge of the mission of the KCCTE (83%). One teacher (17%) reported a relationship with her teacher in the Technical Teacher Education program (in affiliation with the KCCTE) as a reason for contributing to the KCCTE Resource Library. These ties seemed to invoke a feeling of trust in the organization.

Table 8: Responses to tie with entity

Subsection	Cases who Reported this Subsection
Alma mater	04, 05
KCCTE mentoring program	03, 04, 05
KCCTE mission	01, 02
KCCTE workshops	04
PSU TTE teachers	05
Administrator encouragement	06

Alma mater. Two teachers reported a tie to Pittsburg State University. This response was one I did not anticipate. These two responses seemed to indicate the importance of giving back to their alma mater.

> The second thing is that, you know, Pitt State, my alma mater, that's where I went to school. So I thought the opportunity to maybe contribute something to where I went to school, you know? I affiliated with that, instead of just some random group that I don't have any relationship with; that felt right. (Interview 04)

> And that with it being put on through PSU, it made me feel passionate about doing it. And like, this is my school. (Interview 05)

Knowledge of entity. Five teachers expressed a trust or knowledge in the KCCTE through professional development opportunities, and because of their experiences in those activities, felt a sense of trust to contribute their intellectual capital to the KCCTE Resource Library. Three teachers are involved in the CTE Mentoring Program supported by the KCCTE. One teacher referred to her relationship and the trust she had in her teacher in the Technical Teacher Education program at PSU as being important to her when contributing. One teacher mentioned attending a workshop and enjoying the networking that was taking place there as a factor influencing her decision to contribute. Four teachers reported receiving email communications directly from myself as their initial invitation to contribute, and because of the tie with KCCTE, were willing to contribute.

> And then honestly, your emails were so professional. I felt like, "This is a person I'd like to work with." I mean, really, I'm not kidding. I mean, really, [laughing]. (Interview 04)

> So, if I didn't know about it, and I didn't have prior knowledge, if I just got a random email from someone I didn't know saying, “Hey, would you be interested in this?” I would probably be like, “No.” But if Gayla Randall, from KSDE, or somebody from Pitt State that I know personally says, “Hey, we have this going on, and we think you would

be good for this, we think you would be a great contributor to this." Then I kind of have some sense of personal, you know, they picked me to do this, they must think that I will do a good job at this. (Interview 05)

One teacher did not have a previous relationship with the entity but was encouraged through email to participate from an administrator at the state level in her content area. I asked her if she thought this influenced her to contribute.

In a way, I think it probably did. You know, you don't really think about that, but since he's kind of in charge of our Ag programs [Kurt Dillon] in the state and directing them, if he's saying that, then obviously, you know, it's like, "Hey I should probably take part in this or find some way to help out. (Interview 06)

Interestingly, only one teacher interviewed, has made contributions to other OER repositories. This particular teacher is very knowledge in OER and is a proponent of the movement of OER across the nation. His trust in the KCCTE Resource Library was extremely important to him, that the materials were disseminated correctly and particularly to the CTE audience.

The KCCTE Library is great. And I think you might, whether you read research or you talk to other people in the field, I think you'll probably run into some people that will say, "Well, is it really needed? Because there's all these big repositories out there." I'm not one of those people. Maybe it's because my area is so "niched", I feel like we do need niche repositories for OER. Sure, places like OER Commons are great to go check and see what's out there. But at the end of the day, if you guys are plugged into CTE teachers very effectively in the area, and if we know exactly what their needs are, we can meet

them instead of just being like, "Here's all this stuff; hopefully, someone uses it." (Interview 01)

Complementary Facts

There were some data collected that describe the feelings and benefits contributors experienced after contributing their curriculum to the KCCTE Resource Library. These data were coded and listed in the Data Summary Tables (Appendix N) as Benefits of Contributing to OER. Because of the context they were reported within, they were not coded into the Contributing Factors themes, and do not relate back to the research question. Coded comments within this theme were not considered findings, but are possibly facts that can be referred to when recruiting contributors for OER.

Facts were also collected during the six interviews that were coded under the main heading of Process Ideas. These were comments related to the KCCTE Resource Library Contribution Process (Appendix C). These codes were determined as inconsequential to the research question, “Why do CTE teachers contribute their intellectual capital to OER repositories?” and are not reported within this study. They will, however, be valuable to my work as the coordinator of the KCCTE Resource Library.

Chapter Summary

This chapter describes the demographics of six cases interviewed face-to-face to investigate the research question, “Why do CTE teachers contribute their intellectual capital to OER repositories?” Four major findings were presented after analysis of teacher responses regarding their perceptions of their experiences contributing to an open educational resources (OER) repository, the Kansas Center for Career and Technical Education (KCCTE) Resource Library. Data from face-to-face interviews, supporting documents, field notes, and member

checks support these findings. Quotes taken directly from the interviews are used throughout the chapter to enhance the reader's opportunity to gather insight from the data, and to feel the reality of the perceptions of these six Career and Technical Education (CTE) teachers.

The primary finding from this study was that all cases expressed an understanding of the significance of contributing to OER as a result of a previous experience as a CTE teacher. To gain more clarity in this finding, this category was broken into three subsections: professional experiences, challenging experiences, and networking experiences.

The second finding was that most cases perceived the stipend as an influential factor in the willingness of the teacher to contribute OER to a repository. While none of the teachers reported this as a primary factor in their decision, all six cases reported it as important to them. Two teachers reported that they would contribute without the stipend, even though the stipend was appreciated. Four teachers reported that the stipend was an important and necessary component to the process.

The third finding was that all six cases indicated time as a barrier to be weighed when considering the benefits of contributing OER. While the cost of time was not reported as a factor that outweighed the benefits, timing plays a definite role in when and how often a teacher will contribute. As reported by all six cases, all teachers have extra duties assigned and personal commitments which sometimes do not allow them to commit to the time-consuming task of developing curriculum.

The fourth finding was that a tie to the entity hosting the repository was an important factor when CTE teachers were making a decision to contribute to the KCCTE Resource Library. One teacher, very knowledgeable in OER, has contributed to several repositories, but feels contributing to a specific CTE repository is important. Five teachers reported that their

contributions to the KCCTE Resource Library were the OER contributions they had made. For these five teachers, a tie with the entity was an important factor in their decision. Conclusions of the findings from this study, implications for research, and recommendations for future investigations are presented in Chapter Five.

CHAPTER FIVE

Conclusions and Recommendations

This multi-case study was conducted to explore why Career and Technical Education (CTE) teachers contribute their intellectual capital to open educational resource (OER) repositories. By understanding the factors that influence teachers' willingness to contribute to OER repositories, evidence-based decisions can be made when determining sustainability needs of such repositories. Six interviews were conducted with Career and Technical Education (CTE) teachers who had previously developed and contributed open educational resources (OER) to the Kansas Center for Career and Technical Education (KCCTE) Resource Library. A full description of each case and the process of choosing them utilizing a maximum variation strategy is described in Chapter Three.

This chapter includes conclusions about the findings, implications for decision makers for the sustainability of OER repositories, a discussion about the limitations and assumptions presented in Chapter One, and my recommendations for future research.

Conclusions about the Findings

After carefully analyzing the coded data collected during face-to-face interviews, four major categories emerged regarding CTE teachers' decisions to contribute to OER repositories. From these four categories, the findings emerged. After analysis of all data, primary (face-to-face interviews and member checks) and secondary (documents stored as a result of the contribution process at the KCCTE and field notes), the findings indicated that teachers are willing to contribute their intellectual capital when multiple factors are present. It is possible, based on the data, that all four of these factors need to be occurring at the same time for the teacher to be willing and able to contribute. As depicted in Figure 1, the four factors are: a previous experience

leading the teacher to understand the significance of OER, a stipend or incentive available for the cost of time involved in developing curriculum, the time available to make such a commitment, and a tie to the entity hosting the OER repository.

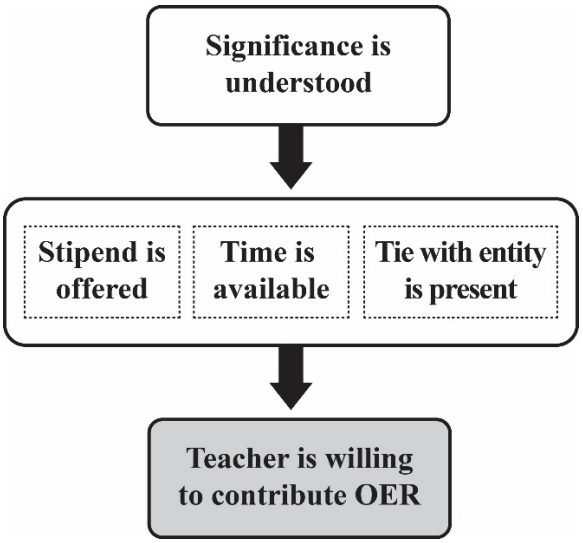

Figure 1: Visual representation of findings. When the significance of contributing to an OER repository is understood, the CTE teacher is willing to develop and contribute their intellectual property if three factors (stipend, time, and tie with entity) are present.

Even though teachers may be willing to contribute, and understand the significance of contributing, they may not be at a point in their lives, professionally or personally, to have the time available to commit to the development process. It is suggested that while each of these factors need to be present at the same time, it is likely that the first finding, understanding the significance, is present before the teacher is willing to consider the possibility of contributing their intellectual capital. After a teacher has reached this point of understanding, the other three factors seemed to have equal value for most teachers and need to happen simultaneously. All six cases reported that considerable time was required to prepare lesson plans and supporting materials for contribution to the KCCTE Resource Library. The majority of cases (4 out of 6) reported they are not willing to invest that time unless they are rewarded for it in some manner.

Because the KCCTE Resource Library contribution includes a stipend, it is possible this was the incentive most reported as necessary in this case study. Knowledge and trust of the OER repository must be tied to the opportunity, as indicated by all six cases of this study. The following discussion on conclusions will be organized by the four findings.

Finding 1

All cases expressed an understanding of the significance of contributing to OER as the result of a previous experience as a CTE teacher. This perceived understanding emerged from follow-up questions asked during the interviews and was revealed at different points throughout each interview. While all six cases reported different reasons for initially contributing, they all described previous experiences that led them to understand the significance of contributing their intellectual capital to an OER repository. During data analysis, three subsections of previous experiences emerged: professional experiences, challenging experiences, and networking experiences.

Within the professional experiences subsection, three teachers reported their primary willingness to share with others was attributed to their professional knowledge and the desire to leave a legacy. These findings support research done by Vuori and Okkonen (2012) about the importance of sharing knowledge, although this research was done within an industry organization and does not represent the perceptions of CTE teachers.

Within the subsection for challenging experiences, four cases reported their challenges as a new teacher and expressed hope that their contributions will alleviate some of these challenges for others. Supporting this finding, previous research regarding the challenges of curriculum development, lack of resources, and prep time for CTE teachers has been conducted (Dainty, 2012; He & Cooper, 2011; Knowles et al., 2005; Yohon, 2005).

Within the subsection of networking experiences, two cases in this study reported that one of the benefits of contributing to an OER repository was the feeling of being part of a network of other CTE teachers and three teachers reported informally sharing materials with others before contributing to an OER repository. Four teachers reported an appreciation for teachers who had shared with them as new teachers, and the desire to help others in this same way. This desire for collaboration and networking supports previous research conducted by Skinner et al. (2011) and Sandford et al. (2011) for CTE teachers.

Conclusions to finding 1. A conclusion to be drawn from this finding is that contributors will not be willing to contribute based on reward alone. While benefits of contributing were reported in this study, it seemed that true willingness to initially contribute was a result of a previous experience. Using this knowledge, coordinators of OER repositories should be creative in their recruiting techniques. Promoting the significance of OER should be the focus of promotional campaigns, directed towards the previous experiences of the CTE teacher.

Finding 2

Most cases expressed the importance of a stipend as an influential factor in their willingness to contribute to OER. Four teachers reported the importance of the stipend as a factor in their willingness to contribute or to complete the curriculum in a timely manner. Two teachers in this study contradict the finding regarding stipend, saying they will contribute with or without a stipend, even though they appreciated the stipend offered by the KCCTE. An assumption listed in Chapter One was that teachers are motivated to contribute by more factors than the stipend. I asked each case directly what impact the stipend had in their decision to contribute. Answers varied and are described in detail in Chapter Four, but the findings suggest a reward for the time given to develop and share intellectual capital is important to these CTE teachers. McShane

(2017) states, “Teachers want free, high-quality resources, but the people who create them want to be paid for doing so.” This need of a monetary incentive creates the perplexing issue of how to sustain the OER repositories, concerns expressed in research by Wiley and Gurrell (2009).

Conclusions for finding 2. A conclusion of this finding is that a stipend is an important factor when considering rewards for the CTE teacher to contribute. Coordinators should seek to find monies available for rewarding these teachers which shows recognition of the value of their intellectual capital and time. If a stipend is not a possibility, other forms of rewards that promote teachers professionally should be offered.

Finding 3

All cases indicated time as an influential factor to be weighed when committing to contributing their materials to OER. All six cases reported that time was either a cost of contributing or one of their concerns before committing to developing curriculum to share. All teachers responded at some point throughout the interviews about the expectations of CTE teachers, and the challenges these expectations place upon them. All six cases also reported that developing quality curriculum at a level that is valuable for other teachers requires an additional time commitment. All cases reported that their daily lesson plans were for themselves, but the process of developing valuable curriculum for others was time consuming. While all six cases in this study have recently contributed to the KCCTE Resource Library, and reported it as an overall positive experience, they were not all able to commit to contributing again because of time. This finding supports research conducted by Shum and Ferguson (2012) regarding the time commitment necessary to create a high-quality sequence of lessons forming an entire curriculum.

Conclusions for finding 3. A conclusion from this finding is that coordinators should seek the most streamlined process available for contributors. As time was the most reported

barrier for contributors, finding ways to reduce the time required to develop and contribute curriculum is important in growing and sustaining OER repositories. Providing templates, examples, and a strong support system during the contribution process were reported as important in this study.

Finding 4

All cases reported a previous tie with the entity as an important factor in their decision to contribute to an OER repository. A previous tie with the entity seemed to invoke a trust in the contribution process and the dissemination of the OER materials. One teacher specifically reported that she would not contribute, even if all other factors were present, unless she had a tie to the entity hosting the repository. Two teachers reported a direct tie with the KCCTE Resource Library through Pittsburg State University, their alma mater. It was important to them to be able to share and give back to this educational institution. Research supports this finding as Pirkkalainen et al. (2017) report that a sense of trust and security are necessary factors influencing teachers to share and collaborate.

Conclusions for finding 4. A conclusion from this finding is that coordinators should be creative in developing ties with teachers before recruiting. A personal email from someone known to teachers was reported to be an influential factor in this study and should be considered when reaching out to possible contributors. Recruiting of teachers who have participated in activities associated with the hosting repository might be another focus of recruitment campaigns. Furthermore, recruitment efforts should provide information promoting trust in the OER maintenance and dissemination of the curriculum.

Limitations

As listed in Chapter One, four limitations are present and might hinder the transferability of this case study. Teacher preparation methods were not investigated. This might limit the study as preparations might contribute to various challenges of the new teacher, a factor mentioned by a majority of cases in this study. Administrative support to teachers was not investigated in this study. This might also result in a variety of factors that might surface in the challenges of CTE teachers. Several factors were reported as challenging to CTE teachers, and specifically new teachers, but lack of administrative support was not reported as a barrier to the decision to contribute OER. School environment was not investigated in this study. Again, this might have an effect on the teacher's daily life, resulting in a challenge for the CTE teacher, but it was not reported as a factor by these six cases. Finally, the socioeconomic status of the six cases' schools was not investigated. This socioeconomic status might affect the lack of resources, and this might influence the teacher's need of OER or might contribute to the teacher's challenges. Four cases reported a lack of resources in their content area, but only one teacher reported this as a result of low budgets. In the context of this study, teachers were reporting a lack of resources because of the career field they teach within. While low budget concerns might have been a factor in the lack of resources, this was not investigated in this study.

Delimitations and Assumptions

Delimitations were set to bound the case as recommended by Bloomberg and Volpe (2016). Only CTE teachers who had previously contributed to the KCCTE Resource Library and are currently teaching CTE courses were considered during case selection. The KCCTE Resource Library is an OER repository specifically for CTE teachers. Therefore, resources are approved only if they are relevant to CTE teachers. This may limit the transferability of this

study for general education OER repositories. The KCCTE has been created to support professional development opportunities for CTE teachers. Because of the tie with CTE teachers through these various activities, it is possible this creates a unique trust that may be challenging to achieve for other OER repositories. Only current CTE teachers were chosen for this case, and it's possible that other individuals might have unique perspectives to share on this topic. Retired CTE teachers or adjunct CTE teachers might be valuable contributors to OER repositories and might be able to provide a helpful perspective.

Assumptions were also provided in Chapter One of this study as suggested by Bloomberg and Volpe (2016), and these will be discussed in no order of importance. It was assumed that the methodology used in this study has the ability to correctly analyze respondents' perceptions. A multi-case study methodology was utilized, paired with a maximum variation strategy to select cases. This allowed investigation of the perceptions of six individual cases who met the set criteria, and selection of cases from multiple career fields as defined by the Kansas State Department of Education (Appendix B). By adhering to this design, I was able to investigate the possibility of whether differences in content area seemed to have an impact on the willingness of a CTE teacher to contribute their intellectual capital to an OER repository. I think it is important to note that findings did not indicate a noticeable difference among CTE fields represented.

A second assumption was that the cases would be honest in their responses. To address this assumption, I was careful to remain neutral in my facial expressions and body language during the interviews. Before each interview, I encouraged the teacher to be honest, and explained the importance of honesty in order to gather the most meaningful data. Referring back to memos made during data analysis, one of my notes asked, "Does the fact that I am conducting the interviews present a barrier to honesty?" Since I am the point of contact for all six cases

when they contribute OER to the KCCTE, and since a stipend is involved, I discussed with a colleague the possibility of a follow- up study with other contributors and with someone else conducting the interviews. Taking this into consideration, it is also important to acknowledge that several of my field notes taken during interviews included that I felt cases were being genuine in their responses.

The third assumption was that the stipend provided by the KCCTE to CTE teachers willing to develop and contribute their curriculum was not the only contributing factor important to the teachers contributing. I included several questions in the interview to allow cases to respond about their perceptions of the importance of the stipend. While the stipend seemed to be an important factor to consider, the findings in the study suggest that is not the sole factor. Several other incentives were suggested, including certificates of completion to be provided. These certificates are already provided at the secondary level and can be used for accumulating professional development points required for licensure renewal. The suggestion that these certificates might also be useful for post-secondary teachers will be implemented in my future procedures, as it was reported that these might be helpful for promotional purposes for post-secondary teachers.

Recommendations for Future Research

Future research is recommended to complement this research based on analysis of data, findings and conclusions. The recommendations that follow are for (a) coordinators of OER repositories, (b) advocates of OER and members of the OER community, and (c) future research.

In Finding 1, previous experiences of CTE teachers was reported to lead to an understanding of the significance of OER. One subsection that emerged in this finding was professional experiences. When studying the data, I noticed three teachers mentioned the

importance of knowing they were sharing their knowledge gained from years of experience. Two of these three teachers alluded to leaving a legacy. When analyzing this finding, one interesting fact from the demographic data emerged. All three of these cases were over the age of 31. Further investigation of this correlation and the willingness to contribute might be advantageous to those hoping to sustain the availability and value of OER repositories. This age group of individuals have more teaching experience and might also have more available time in their personal life, addressing a second important factor from the findings. One might wonder if teachers in this age bracket are more likely to be financially secure, making the amount of the stipend less important, addressing another finding in this study. Knowledge about the age correlation to the importance OER might be valuable in the overall movement of OER. Future research might also include investigating correlation between the cases' gender, years of experience, or teaching level and their responses.

Two contradicting points emerged during the findings, and both of these might lead to future research studies. One was regarding Interview 01. This teacher is extremely knowledgeable about OER and copyright laws. His expertise and passion for OER was evident throughout the interview. My field notes indicate that he was adamant that he would continue to contribute to OER without a stipend. Is it a personality trait, a passion for OER, or some other variable that might encourage other similar CTE teachers to contribute without the stipend? While this study was exploratory in nature and discovered that the stipend is an important factor in contributing, I think it is worth exploring this topic more deeply.

The second contradictory point was with Interview 05. This CTE teacher has contributed more courses to the KCCTE Resource Library than any other teacher to date. At the time of her initial contribution, her primary motivation was to become more organized. She had been given a

new course for the upcoming school year and being aware of the opportunity to contribute courses to the KCCTE Resource Library for a stipend, developed curriculum. She reported one of the primary benefits from that experience was her professional development. By carefully constructing a course for others, and by having a subject matter expert (SME) review her materials, she feels more confident that what she is teaching is meeting state standards and relevant to her students. I found it interesting that her reasons for contributing were more for herself, and yet, she has contributed more than anyone else. Investigating this line of thought more fully might be enlightening to OER repository facilitators as well.

Chapter Summary

Chapter Five includes a summary of four major findings from this study, conclusions from these findings, and a discussion of the limitations, delimitations and assumptions of this study. Finally, recommendations for future investigations were suggested.

The purpose of this multi-case study was to understand why Career and Technical Education (CTE) teachers are willing to contribute their instructional materials to open educational resource (OER) repositories. The research question guiding this study was, "Why do CTE teachers contribute their intellectual capital to OER repositories?" The significance of the study is the contribution to the existing body of knowledge which will enhance evidence-based decisions that need to be made by OER repository facilitators for sustainability of the OER and the growth of OER in general. West (2016) reports some of the challenges for individuals responsible for maintaining OER repositories as selecting, organizing, disseminating, and promoting materials. Because of these challenges, facilitators of OER repositories should hope to build a contribution process that provides rewards influential enough to prompt them to contribute again. This was expressed during data collection by Interview 03 when she stated,

“Contributing empowered me to want to continue to do more.” At the same time cases acknowledged the challenges of contributing, they also seemed to recognize the importance of OER for CTE teachers. Cases seemed sincere in their willingness to share their experiences and this was perceived as an understanding of the significance of OER for CTE teachers. Facts were gathered during interviews that will help guide the Kansas Center for Career and Technical Education faculty and staff make evidence-based decisions regarding the process of contributing, leading to the possibility of encouraging teachers to repetitively contribute curriculum. These factors were not reported in this study as they did not directly relate to the research question.

The four major findings in this case were that CTE teachers expressed an understanding of the significance of contributing to OER. This understanding seems to come from previous experiences as a CTE teacher. After this understanding is present, three factors are important: the available time necessary to develop curriculum, a stipend to reward that time, and a tie to the repository, which seems to create trust that the curriculum will be maintained and disseminated correctly. Cases in this study indicated a strong belief in the importance of contributing and Interview 04 explained her desire to share her intellectual capital with others by stating the following:

> I have a quote over there that motivates me, reminds me of why I do what I do. I have a lot of things - I'm very symbolic. But this quote is from Elie Weisel, and I love this thought that life did not begin at my birth. [Reading quote on wall] "Others have been here before me. And I walk in their footsteps. The books I have read were composed by generations of fathers and sons, mothers and daughters, teachers and disciples; I am the sum total of their experiences, their quest, and so are you."

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Appendix A

National Career Clusters Framework

Agriculture, Food & Natural Resources
- Agribusiness Systems
- Animal Systems
- Environmental Service Systems
- Food Products & Processing Systems
- Natural Resources Systems
- Plant Systems
- Power, Structural & Technical Systems

Architecture & Construction
- Construction
- Design/Pre-Construction
- Maintenance/Operations

Arts, A/V Technology & Communications
- A/V Technology & Film
- Journalism & Broadcasting
- Performing Arts
- Printing Technology
- Telecommunications
- Visual Arts

Business Management & Administration
- Administrative Support
- Business Information Management
- General Management
- Human Resources Management
- Operations Management

Education & Training
- Administration & Administrative Support
- Professional Support Services
- Teaching/Training

Finance
- Accounting
- Banking Services
- Business Finance
- Insurance
- Securities & Investments

Government & Public Administration
- Foreign Service
- Governance
- National Security
- Planning
- Public Management & Administration
- Regulation
- Revenue & Taxation

Health Sciences
- Biotechnology Research & Development
- Diagnostic Services
- Health Informatics
- Support Services
- Therapeutic Services

Hospitality & Tourism
- Lodging
- Recreation, Amusements & Attractions
- Restaurants & Food/Beverage Services
- Travel & Tourism

Human Services
- Consumer Services
- Counseling & Mental Health Services
- Early Childhood Development & Services
- Family & Community Services
- Personal Care Services

Information Technology
- Information Support & Services
- Network Systems
- Programming & Software Development
- Web & Digital Communications

Law, Public Safety, Corrections & Security
- Correction Services
- Emergency & Fire Management Services
- Law Enforcement Services
- Legal Services
- Security & Protective Services

Manufacturing
- Health, Safety & Environmental Assurance
- Logistics & Inventory Control
- Maintenance, Installation & Repair
- Manufacturing Production Process Dev.
- Production
- Quality Assurance

www.careertech.org/Career-Clusters

Marketing

- Marketing Communications
- Marketing Management
- Marketing Research
- Merchandising
- Professional Sales

Science, Technology, Engineering & Mathematics

- Engineering & Technology
- Science & Mathematics

Transportation, Distribution & Logistics

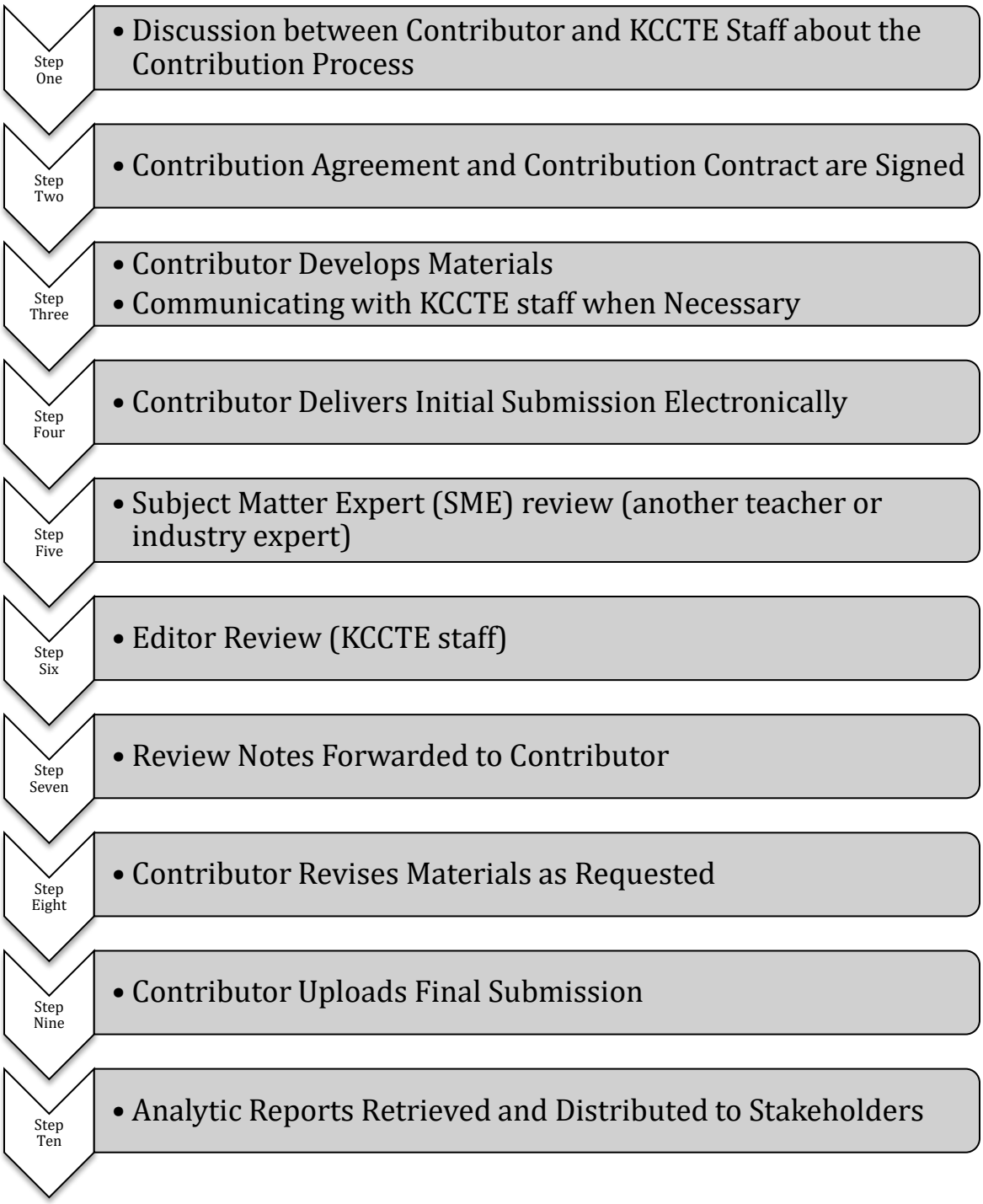
- Facility & Mobile Equipment Maintenance
- Health, Safety & Environmental Management
- Logistics Planning & Management Services
- Sales & Service
- Transportation Operations
- Transportation Systems/Infrastructure Planning, Management & Regulation
- Warehousing & Distribution Center Operations

Appendix B

Kansas Careers Model

Appendix C

KCCTE Resource Library Contribution Process



Appendix D

KCCTE Resource Library Contributor Agreement

KCCTE
Kansas Center for Career and Technical Education
Pittsburg State University

KCCTE Resource Library Agreement

The Kansas Center for Career and Technical Education is currently asking secondary and post-secondary teachers to assist in providing open education resources to the KCCTE resource library. These materials will be made available (at no cost) to all CTE teachers in an editable format (Word).

NOTE: *All resources must be prepared by the instructor contracting with us. While references to textbooks may be noted as a reference option in lesson plans (please cite correctly), the uploaded resources must usable without the purchase of additional materials. All uploaded resources should be labeled with Creative Commons licensing (see template), and free of any other copyright restrictions.*

Instructor responsibilities:

- Provide materials for 1 semester.
    - Supporting materials required:
        - Lesson plans (template provided)
        - PowerPoints with lecture notes
        - Student activities/assignments
        - Rubrics for assignments
        - Assessments with answer keys
        - Index of all materials (template provided)
    - Optional items
        - Examples of previous student work (no names)
        - Classroom management/best lab practices
        - Syllabus

- Complete KCCTE Lesson Plan template provided for each lesson.
- KSDE competencies should be the basis for content (secondary).
- Materials must be uploaded to KCCTE resource portal.
- Collaborate with KCCTE faculty/staff.
- Meet expected timeline.
- Materials must be reviewed and approved by KCCTE faculty/staff and/or content specific instructor before payment will be issued.
- Sign PSU Independent Contractor/Consultant Certification.
- Sign/Agree to the KCCTE Contributor License Agreement.
    - Relinquish rights as author
    - Using original work
    - Cite all sources

KCCTE
Kansas Center for Career and Technical Education
Pittsburg State University

KCCTE Resource Library Agreement

KCCTE responsibilities:

- Develop contractual arrangements for contributor.
- Collaborate with contributor.
- Review/approve course.
- Provide assistance in uploading information.
- Set up a continual review process.

Compensation:

- $_____ for complete materials for one semester course.
- Payment will be made after approval of course and successful submission to KCCTE resource portal.
- $_____ for making changes (provided by reviewer) after first submission.

_____ _____
Name Date

_____
Course Name

Appendix E

KCCTE Contributor Contract

Pittsburg State University
Independent Contractor/Consultant Certification & Request to Pay Worksheet
(Revised August 23, 2011)

*IMPORTANT: This form should be completed and submitted to the PSU Business Office a minimum of **10 working days** prior to the date when the individual first performs services for PSU by the individual. This will provide time for the request to pay as an independent contractor/consultant to be reviewed and approved before services are rendered. If there are **5 working days or less** before services are first rendered, the department should appoint the individual as an employee to ensure that appropriate paperwork is completed in a timely manner.*

Information on the form will be reviewed and a determination will be made whether the individual who performs personal services for the University is an **employee** or an **independent contractor/consultant.** The individual providing the services completes Section I. The department completes Section II. The completed form is sent to the Business Office, 110 Russ Hall along with a W-9, DPR, and any other necessary documentation.

If the individual is determined to be an **employee**, the paperwork will be returned to the department, and the department must process an electronic appointment in GUS to pay the individual through the payroll process. Individuals paid through payroll will be required to completed additional paperwork before they can be paid. Detailed information on payment procedures is found on the HRS Web site. To access from the HRS home page, access "Payroll Information" then "Payment for Personal Services to Employees and Independent Contractors/Consultants."

Contact the Business Office @ x. 4150 or HRS @ x 4188 for assistance.

Section I – Independent Contractor/Consultant Certification *(To be completed by the Individual performing services)*

1. Individual's Name (please print): _____

2. SS# or Taxpayer ID#: _____ Phone or Email: _____

3. Address: _____

_____

4. Citizenship Status (check one): ____ U.S. Citizen
____ Resident Alien (Attach copy of Alien Registration Card/Green Card)
____ Nonresident Alien (NRA): Visa Type: _____ Country of Residence: _____

IMPORTANT NOTE FOR NONRESIDENT ALIENS (NRA): If you are a NRA, attach a copy of your Visa, I-20, & Social Security Card, and a completed W-8 BEN. Your tax status will be reviewed, and you will be notified if a Form 8233 is needed. If an 8233 is needed, there is a minimum processing time of three (3) weeks before payment may be made.

5. Describe the services to be provided. Attach a separate sheet if needed. **This does NOT replace a contract or invoice billing for services.**

6. Dates the services will be provided: _____ Total fee for these services: _____

7. Where will the services be provided? _____

8. Have you worked as an employee of PSU or a Regents institution at any time during the last 12 months? Yes No
If Yes, provide details (job title, responsibilities, employer, etc.)

9. At any time in the prior 12 months, did you have an appointment at PSU and provide the same or similar services in that appointment? Yes No

10. Do you offer the same service to other clients as part of a trade or business? Yes No

11. Will you realize a profit (or loss) from the work? Yes No

_____ _____

Independent Contractor/Consultant's Signature Date

Appendix F

Case Invitation Email

Dear KCCTE Resource Library Contributor:

As a contributor to the KCCTE Resource Library, you have been selected to engage in a study, *Why career and technical education teachers contribute intellectual capital to open educational repositories: A case study*. The information gathered in this study is extremely valuable to guide the KCCTE staff as they strive to keep the KCCTE Resource Library as a sustainable repository for all Kansas Career and Technical Education teachers.

Contributors have been selected based upon various factors which have been designated as being critical to provide in-depth information about the experience of contributing to this repository. Your participation will include a recorded face-to-face interview lasting approximately 1 1/2 hours in your facility at your convenience. After transcription of the interview, you will have an opportunity to read the transcribed notes, ensuring that your perceptions have been correctly interpreted. All responses and data collected will be kept confidential. An alias will be used in reference to your responses to assure anonymity when reporting results.

If you have any questions, please contact me at 620-235-4102 or respond to this email. If you are willing to participate, please respond to this email suggesting some convenient times for an interview.

Sincerely,

Kelley Manley, Researcher

University of Arkansas, Doctoral Candidate
KCCTE/Pittsburg State University, Web Coordinator

Appendix G

Informed Consent

Dear Participant:

Thank you for accepting the invitation to participate in the study, *Why career and technical education teachers contribute intellectual capital to open educational repositories: A case study*. This study is being conducted to provide data to the KCCTE staff to assist in future decisions regarding the sustainability of the KCCTE Resource Library. Participants have been selected from a list of contributors to the KCCTE Resource Library.

Your participation will include a recorded face-to-face interview lasting approximately 1 1/2 hours in your facility at your convenience. After transcription of the interview, you will have an opportunity to read the transcribed notes, ensuring that your perceptions have been correctly interpreted. All responses and data collected will be kept confidential. An alias will be used in reference to your responses to assure anonymity when reporting results.

There are no known risks associated with this research, nor are there any benefits to the participant expected from this research. There is no compensation or costs associated with this study for the participant. All information will be kept confidential; no names will be associated with the data collected from your interview. Information will be destroyed at the end of three years after the conclusion of this study.

Your consent is requested by signing below. Participation in this project is voluntary, and you may withdraw from this study at any time. Also included in this email is a demographic information form. Please complete both this informed consent, and the demographic information form, and return to me through email.

If you have any questions, please contact me at 620-423-2161.

Sincerely,

Kelley Manley, Researcher

University of Arkansas, Doctoral Candidate
KCCTE/Pittsburg State University, Web Coordinator

Date _____

Participant Signature _____

Demographic Information Form

Male: _____ Female: _____

Age: _____ 22-30
_____ 31-40
_____ 41-50
_____ 51 or above

Education level:
_____ Trade/technical training
_____ Associate degree
_____ Bachelor degree
_____ Master degree

Teaching experience: _____ Years

Teaching content: _____

Teaching level: _____

How did you learn about the opportunity to contribute instructional materials to the KCCTE Resource Library? (check all that apply)

____ Colleague
____ Conference
____ Email
____ Facebook
____ Indeed.com
____ KCCTE Faculty or Staff
____ Magazine ad
____ Postal mailing
____ Other: _____

Appendix H

Interview Protocol

Date of Interview: _____

Interviewee: _____

Research question: Why are CTE teachers willing to create and share resources to OER repositories? ***follow-up questions indicated by: " - "*

1. What have been your previous experiences accessing open educational resources?
2. How did these experiences (positive or negative) influence your decision to contribute to an OER repository?
3. What contributions have you previously made to OER repositories?
4. Why did you initially choose to contribute to each OER repository?
5. How did an existing (or lack of) relationship with the repository's institution influence your decision to contribute?
6. What hesitations did you have before contributing to these OER repositories?
    - How or why these hesitations were or were not valid?
7. What preconceived benefits did you expect to gain from contributing to OER?
    - How or why these benefits were or were not met?
8. What were some of the positive benefits gained from contributing to OER repositories?
    - What specific positive professional experiences (benefits) of contributing are you willing to share?
    - How do you feel about these benefits?
    - How have these benefits influenced you to continue to contribute to OER?

9. What were some of the professional costs encountered from contributing to OER repositories?

    - What specific negative professional experiences (costs) of contributing are you willing to share?
    - How do you feel about these costs?
    - How have these costs influenced you to continue to contribute to OER?

10. What were some of the personal benefits gained from contributing to OER repositories?

    - What specific positive personal experiences (benefits) of contributing are you willing to share?
    - How do you feel about these benefits?
    - How have these benefits influenced you to continue to contribute to OER?

11. What were some of the personal costs encountered from contributing to OER repositories?

    - What specific negative personal experiences (costs) of contributing are you willing to share?
    - How do you feel about these costs?
    - How have these costs influenced you to continue to contribute to OER?

12. What impact did monetary incentives have on your decision to initially contribute to OER?

13. What impact do monetary incentives have on your decision to continue to contribute to OER?

14. What additional incentives could be offered to encourage you to share your instructional materials to an OER repository repeatedly?

15. What existing barriers discourage you from sharing your instructional materials to an OER repository repeatedly?

16. What additions to the contribution processes you have experienced would encourage you to contribute repeatedly?
17. What deletions from the contribution processes you have experienced would encourage you to contribute repeatedly?
18. What other comments would you like to add?

Appendix I

Participant Demographic Information Matrix

Case	Gender	Age	Education Level	Teaching Experience (Years)	Career Field	Teaching Level (Sec or Post-Sec)
1	M	31-40	Master	6	Media & Tech	Post-Sec
2	M	Above 51	EdS	38	Design, Prod & Repair	Post-Sec
3	F	31-40	Master	16	Business	Sec
4	F	41-50	Master	8	Health	Sec
5	F	22-30	Master	7	FCS	Sec
6	F	22-30	Master	4	Ag	Sec

Appendix J

Contact Summary

Case (XX) – Interview (Date)

Category 1: OER Experiences

Previously contributed:

Positive or negative?

Why?

Previously utilized for classroom instruction:

Positive or negative?

Why?

Other notes:

Category 2: Contributing Factors

Why KCCTE:

Positive or negative?

Why?

Other notes:

Category 3: Expectations

Positive or negative?

Why?

Other notes:

Appendix K

List of Predetermined Codes

Previous OER Experiences

1. No idea what it was
2. Heard of it
3. Knowledgeable
4. Contributed
5. Accessed/utilized

Contributing Factors

1. Colleague encouragement
2. Administrator encouragement
3. Financial gain
4. Desire to share with others
5. Professional development
6. Trust in or knowledge of repository

Benefits

1. Recognition
2. Sense of accomplishment
3. Professional development

Costs

1. Time
2. Criticism
3. Prioprietary

Process

1. Positive factors
2. Negative factors
3. Suggestions for improvement

Appendix L

Case Accounting Log

	Case 1	Case 2	Case 3	Case 4	Case 5	Case 6
Invitation accepted	X	X	X	X	X	X
Consent form and Demographic information form sent	X	X	X	X	X	X
Interview	X	X	X	X	X	X
Contact summary complete (member check)	X	X	X	X	X	X
Interview transcribed	X	X	X	X	X	X
Member check sent	X	X	X	X	X	X
Member check received back	X	X	X	X	X	X
Initial coding complete	X	X	X	X	X	X
Secondary Data						
Final Content submitted	X	X	X	X	X	X
KCCTE Contributor Agreement (Appendix D)	X	X	X	X	X	X
KCCTE Contributor Contract (Appendix E)	X	X	X	X	X	X
KCCTE Contributor Log	X	X	X	X	X	X
Email Correspondence collected	X	X	X	X	X	X
Subject Matter Expert Notes	X	X	X	X	X	X

Appendix M

List of Final Codes

CONTRIBUTING FACTORS IDEAS
Curriculum development
Discovery
Dissemination
Easy process
Expertise to share
Financial gain
Previous experiences
Professional development
Sharing with others
Tie to entity/trust
Time/Timing

Challenges of CTE Teachers
Classroom management
CTSO
Curriculum planning
Extra duties
Hands-on/workforce teaching
Isolation/lack of support
Lack of resources
Overwhelmed
Program/equipment changes
Reliance on others
Time required outside of workday

PROCESS IDEAS
Negative
Positive
Suggestions

Barriers to contributing to OER
Copyright
Lack of courses
Time
- Family commitments
- Professional commitments

Benefits of contributing to OER
Challenging (in a good way)
Easier to share
Feels good
Financial gain
Help others
Improved quality
Networking
Opportunity of discovery
Professional advancement
Professional development
Satisfaction
Sub plans – easier to leave

Appendix N

Data Summary Tables

Contributing Factors

	Curriculum development	Discovery	Dissemination	Easy process	Expertise to share	Financial gain
01			X	X	X	X
02	X				X	X
03	X					X
04					X	X
05	X					X
06		X				X
	3 = 50%	**1 = 17%**	**1 = 17%**	**1 = 17%**	**1 = 17%**	**6 = 100%**

	Previous experiences	Professional development	Sharing with others	Tie to entity	Timing	
01	X		X	X	X	
02	X		X	X	X	
03	X		X	X	X	
04	X	X	X	X	X	
05	X	X	X	X	X	
06	X		X	X	X	
	6 = 100%	**2 = 33%**	**6 = 100%**	**6 = 100%**	**6 = 100%**	**# = x%**

Challenges of CTE Teachers

	Classroom management	CTSO	Curriculum planning	Extra duties	Hands-on/workforce teaching	Isolation/ lack of support
01			X		X	
02	X		X	X	X	X
03			X	X	X	X
04	X		X	X	X	
05		X	X	X		
06		X	X		X	
	2 = 33%	**2 = 33%**	**6 = 100%**	**4 = 67%**	**5 = 83%**	**2 = 33%**

	Lack of resources	Overwhelmed	Program/ equipment changes	Reliance on others	Time required outside of workday	
01	X					
02	X	X		X	X	
03	X	X	X		X	
04		X *		X		
05	X	X	X		X	
06						
	4 = 67%	**4 = 67%**	**2 = 33%**	**2 = 33%**	**3 = 50%**	**# = x%**

Other factors reported (by only 1 case [17%]):
Equipment repairs
Feeling unappreciated
Industry certification updates (for teachers)
Industry certification training (for students)
Inheriting a program
Lab/shop management
Learning programs/equipment
Low budgets
Many preps
Pace change (coming from industry)
Pay cut (coming from industry)

Notations:
*Contradictory information – overwhelmed in a good way (ready for a challenge)

Barriers to contributing to OER

	Time	Comments of family commitments	Comments of professional commitments			
01	X	X	X			
02	X*	X	X			
03	X	X	X			
04	X*	X	X			
05	X*	X				
06	X	X				
	6 = 100%	**6 = 100%**	**6 = 100%**			

Other factors reported (by only 1 case [17%]):
Copyright issues (some content areas use purchased curriculum)
Criticism/negativity of OER
Misuse of materials
Have already developed and contributed all courses teaching
Proprietary knowledge (others might have this barrier)

Notation:
*Some contradictory statements made by these cases about time.

Benefits of contributing to OER

	Challenging*	Easier to share	Feels good	Financial gain	Help others	Improved quality**
01			X	X	X	X
02	X		X	X		X
03				X	X	X
04	X		X	X		X
05		X	X	X		X
06		X	X	X		X
	2 = 33%	**2 = 33%**	**5 = 83%**	**6 = 100%**	**2 = 33%**	**6 = 100%**

	Networking	Opportunity of discovery	Professional advancement	Professional development	Satisfaction***	Sub plans
01	X		X			
02		X		X	X	
03	X			X	X	
04				X	X	
05			X	X	X	X
06		X		X	X	X
	2 = 33%	**2 = 33%**	**2 = 33%**	**5 = 83%**	**5 = 83%**	**2 = 33%**

Other factors reported (by only 1 case [17%]):
Appreciation shown by others
Clarity gained
Confidence improved
Credibility improved
Critical thinking skills - improved
Departmental lesson plans – easier to provide
Proud of resources
Professional development points earned
Recognition gained
Respect gained
Time management skills improved

Notations:
*Challenging as a positive factor
** Improved quality of curriculum (updated, innovative, SME feedback)
***Sense of accomplishment

Appendix O

University of Arkansas IRB

UNIVERSITY OF ARKANSAS

To:	Kelley Manley
From:	Douglas James Adams, Chair IRB Committee
Date:	09/04/2018
Action:	**Exemption Granted**
Action Date:	09/04/2018
Protocol #:	1807134256
Study Title:	Why career and technical education teachers contribute intellectual capital to open education repositories: A case study

The above-referenced protocol has been determined to be exempt.

If you wish to make any modifications in the approved protocol that may affect the level of risk to your participants, you must seek approval prior to implementing those changes. All modifications must provide sufficient detail to assess the impact of the change.

If you have any questions or need any assistance from the IRB, please contact the IRB Coordinator at 109 MLKG Building, 5-2208, or irb@uark.edu.

cc: Kit Kacirek, Investigator

Appendix P

Pittsburg State University IRB

Pittsburg State University
GRADUATE AND CONTINUING STUDIES

TO: University of Arkansas
FROM: Pawan K. Kahol; Dean of Graduate and Continuing Studies; Chair of IRB
DATE: August 13, 2018
SUBJECT: IRB submitted by Kelley Manley

An application " Why career and technical education teachers contribute intellectual capital to open education repositories: A case study" was submitted by Kelley Manley for its approval by IRB.

I am pleased to write that Ms. Manley's application was reviewed and approved by the IRB.

Sincerely,

Pawan K. Kahol
Dean of Graduate and Continuing Studies, Dean of Research
Pittsburg State University, Pittsburg, Kansas 66672